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AETIOLOGY AND TREATMENT OF CONVULSIONS DURING ANAESTHESIA

ABSTRACT OF A PAPER BY

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The hypothesis advanced in this paper is that a convulsion or tetany occurring during anaesthesia, local or general, is essentially a muscular phenomenon, caused basically by interference with cell respiration in the brain. In the last analysis nerve-tissue respiration resolves itself into oxidation of glucose. Any factor—and usually several factors are operative at one time in a case of convulsions—which interferes with the vital processes of cerebral cell respiration may cause a convulsion in a patient undergoing operation under either general or local anaesthesia. In the case of local anaesthesia a relative or absolute overdose is needed to produce a convulsion. Briefly stated, it appears that failure of nerve-cell respiration creates a focus of efferent nervous discharge in the cerebral cortex which results in a convulsive seizure. The term "tetany," for the purpose of this discussion, is taken as synonymous with a convulsion of the Jacksonian type. The difference between "tetany" and "convulsions" seems to be one merely of degree.

The conception of failure of cerebral cell respiration as the cause of convulsions during anaesthesia is quite in keeping with the teaching of Penfield and Erickson,* who state that "when anoxia reaches a critical level it becomes irritating to the central nervous system." The theory also conforms to the teaching of Hughlings Jackson, who maintained that, basically, there was only one physiological cause of epilepsy.

The first cases of ether convulsions were reported in 1927, but it had been known for many years that frank anoxaemia could, and frequently did, cause epileptiform movements and "jactitations" during the administration of nitrous oxide anaesthesia. But the occurrence of convulsions in patients whose blood was not noticeably anoxic is a complication of ether anaesthesia now being reported with increasing frequency, and a phenomenon which to date has baffled solution. Many theories have been advanced in explanation (see Table). Current textbooks on anaesthesia reflect the prevailing lack of unanimity as to aetiology and treatment.

Although convulsions during ether anaesthesia were not unknown before 1927, they were certainly not common before 1924. I had a case (Case 1, below) in that year, but a search of the literature at that time failed to reveal another. In 1927 Pinson, Hornabrook, and Gwathmey recorded cases, and from then onwards cases were reported more frequently, many different causes being suggested. From the list in the Table the divergence of opinion as to the aetiological factor or factors is noteworthy, but in my opinion it only appears to be a divergence. These diverse factors are contributory or accessory, the main or precipitating cause of the convulsion being tissue anoxia arising from acapnia and alkalaemia—a point to be developed later.

* Quotations from *Epilepsy and Cerebral Localization*, by Penfield and Erickson (1941), are freely used by kind permission of the publisher, Charles C. Thomas, Springfield, Ill. (Baillière, Tindall and Cox, London agents).

Judging from the multiplicity of suggested convulsion-producing factors in the Table, it is probable that no single factor is the cause. Possibly the convulsions may be due to one primary factor—namely, interference with cerebral tissue-cell respiration, brought on by alkalaemia, which is known to cause a form of occult anoxia from failure of the oxyhaemoglobin (OxyHb) of the blood to release its oxygen to the nerve tissues. The alkalaemia is directly due to acapnia (CO_2 deficit) incurred by pulmonary over-ventilation, which in turn is fostered by fear (inadequate sedation), over-atropinization, toxaemia, and elevated metabolism, together with the use of ethyl ether administered by a semi-open technique.

*List of Writers reporting Cases of "Deep" or "Late" Ether Convulsions, with Suggested Causes**

Reporter	Date	Suggested Cause or Causes
Pinson	1927	Warm ether vapour, CO_2 excess, toxaemia
Hornabrook	1927	Atropine overdosage
Gwathmey	1927	Anoxaemia
Wilson	1928	Acetaldehyde and peroxides
Clement	1928	Anoxaemia
Thomas	1928	Overdosage of ether
Walton	1928	Acetaldehydes, peroxides, and toxaemia
Hadfield	1928	Idiosyncrasy to ether
Mennell	1928	Over-oxygenation
Clarke	1931	Congestion of brain
Mackenzie	1931	Acute toxaemia
Kemp	1932	Alkalosis precipitated by acapnia
Wright	1933	Heatstroke
Bowman	1934	Overdosage of ether
Nix and Garcia	1934	Heatstroke
Rovenstine	1935	Surgical trauma
King	1935	Idiosyncrasy and sepsis
Woolmer and Taylor	1936	Heatstroke
Smith	1936	Heatstroke
Hoseason	1936	Low blood calcium
Tovell and Rosenow	1936	Neurotoxin from streptococci
Hewer	1938	Excess CO_2
Dodd	1939	Over-atropinization and diminished heat-loss of sweating
Park	1940	Cerebral congestion
Brennan	1941	Neurogenic stimulus in hyperpyrexial patient
Tye	1942	Fear; sepsis; hyperpyrexia; overdosage of atropine

* Called "deep" and "late" to distinguish them from ether clonus, an innocuous and not uncommon phenomenon of light ether anaesthesia. It is not impossible—indeed, it is very probable—that ether clonus is due to the same cause, in mild degree, as the so-called "deep" or "late" ether convulsions.

Case Reports

[Here in the original paper followed detailed reports of eleven cases, all of which had come within the writer's personal experience, although he was not in every instance the anaesthetist in charge of the case. Four, which seem to be typical, are given.]

Case 1.—1924. A female aged 46. *Operation:*—Exploratory laparotomy and posterior gastro-enterostomy for perforated duodenal ulcer. *Anaesthesia:*—Ether vapour, with O_2 and semi-open ether technique with mask and damp towels. Convulsions occurred during peritoneal closure after 75 minutes' anaesthesia. *Treatment:*—Intravenous saline. Convulsions ceased in 20 minutes: uneventful recovery.

Case 2.—1931. A male aged 35. *Operation:*—Laparotomy and primary closure of perforated gastric ulcer. *Anaesthesia:*—Intra-

tracheal ether-vapour insufflation with O_2 and no rebreathing. Anaesthesia had continued for 35 minutes and the surgeon was suturing the peritoneum in closure when convulsive movements started in right side of face and spread to right arm and abdominal muscles. Ether was discontinued; the mask of a gas machine was applied to the patient's face and he was made to rebreathe O_2 and his own CO_2, there being no other CO_2 available in the hospital at the time. Within 5 minutes convulsive movements had ceased and the abdominal closure had been completed. A catheter specimen of urine taken immediately was found to be alkaline. Uneventful recovery.

Case 3.—1942. A male aged 29. *Operation:*—Skin graft to face *Premedication:*—Omnopon gr. 1/3 and scopolamine gr. 1/150, subcutaneously one hour before operation. *Anaesthesia:*—Induction by 0.75 g. pentothal sodium (5%) intravenously, followed by endotracheal administration, with closed circuit circle filter of CO_2, of N_2O and O_2, plus ether vapour. Convulsive movements of legs, abdominal muscles, and arms noted 30 minutes after starting anaesthesia. Blood was hypoxic, and had been so for some time according to surgeon's report. Convulsive movements ceased immediately when the oxygen content of the inhaled mixture was increased to 100%. No further convulsions when anaesthesia with large safety margin of oxygen was continued. Post-operative recovery uneventful.

Case 4.—1943. A male aged 26. *Operation:*—Skin graft to left hand. *Anaesthesia:*—Intratracheal nitrous oxide-ether-oxygen following intravenous pentothal sodium (0.5 g.). Closed filter circuit used. When I took over this case anaesthesia had been induced 45 minutes previously and the course had been normal. Pulse was rather faster than usual—110 a minute—and the colour was somewhat dusky. Patient was in second plane of third stage of anaesthesia. Respirations relatively shallow, 14 per minute. Within another 5 minutes of this regimen a violent ether clonus of both the lower extremities started. This was readily controlled by simply doubling the previous O_2 intake and cutting out the CO_2 filter without altering the plane of the anaesthesia. Within 2 minutes the clonus ceased, and within 10 minutes the pulse was down to 90 a minute and the patient's colour was pink.

Abnormal Physiology of Clinical Cryptogenic Conditions*

Penfield and Erickson (1941) have ably reviewed this subject. They divide epilepsy into symptomatic and cryptogenic. The former includes cases in which known aetiological agents, such as brain tumour, scar formation, etc., cause or predispose to convulsions; the latter, that large group of "essential" or idiopathic epilepsies in which the cause cannot at present be found. Consideration of the known factual data as stated by Penfield and Erickson concerning the cryptogenic group may be expected to throw light upon the problem of convulsions during anaesthesia.

Cryptogenic epilepsy begins with an abnormal neuronal discharge in the vicinity of a demonstrably abnormal focus within the central nervous system—what Hughlings Jackson called "the local discharge of grey matter." Holmes pointed out that "local" epilepsy may be focal motor epilepsy, focal sensory epilepsy, visual epilepsy, or auditory epilepsy. For the purpose of this discussion attention will be focused on the first of these varieties. Jacksonian or focal motor seizures are characterized by local movements of some part of the body; in a "Jacksonian march" the spread of movements from one part of the body to another is produced by spread of discharge up and down the precentral gyrus of the cerebral cortex. In the cases cited above the seizures were characteristically Jacksonian in type, beginning with the facial muscles and extending to the abdominal region.

[Here the writer, by means of a series of direct quotations from Penfield and Erickson, drew attention to the clinical data and neurological opinions to be considered:]

"Any normal brain may be the seat of epileptic discharge if it be subjected to the appropriate influence from without."

"More important than electrical rhythm are the causes of the change in cell chemistry that produce dysrhythmia and also the clinical manifestations of epilepsy."

"Studies of the cerebral tissues show that brain metabolism is relatively high. Blood flow through the brain seems to be rapid."

"Blood-flow increases [through the cortex during normal functional activity of any cortical area] would seem to be due to vasodilatation resulting from the presence in the tissue of carbon dioxide, produced by the increased activity of ganglion cells."

"Carbon dioxide in the cerebral tissue causes the local blood vessels to dilate promptly. . . . It [the mechanism] provides for increased blood at the time of functional increase and guards against local anoxia which might otherwise occur. . . . Brain metabolism and quantitative supply from the blood stream are quite accurately balanced under normal conditions."

"Complete arrest of the cerebral circulation results almost invariably in a small convulsive seizure. . . . This would indicate that when anoxia reaches a critical level it becomes irritating to the central nervous system."

"Formijne (1938) observed that convulsions occur after the period of asystole. His graphic records indicate that during asystole there is a continuance of respirations with a hyperventilation of the blood stagnated in the lung. With resumption of cardiac function this hyperventilated blood circulates through the respiratory centre and there is a period of apnoea. Convulsions which occur at this same time were therefore ascribed by the author to the action of blood upon the brain. When O_2 and 5% CO_2 were inhaled convulsions failed to occur under these conditions."

"It [hyperpnoea] will precipitate *grand mal* attacks in from 5 to 30% of the cases. *Petit mal* seizures are much more easily induced by hyperventilation."

"The plasma *p*H has been observed by a number of investigators to shift towards the alkaline side prior to the onset of seizures."

"Oxygen and 5% carbon dioxide should be administered if there is cyanosis."

This last procedure was suggested by me (Kemp, 1932, 1933) as one to be followed regardless of the patient's colour—that is, whether he is cyanosed or otherwise.

Experimental Considerations

When the parathyroid glands are excised from dogs the thyroid, for anatomical reasons, is always removed as well, and in due course, under ordinary conditions, the dogs develop tetany. This sequel can be controlled by intravenous infusion of calcium chloride solution or by physiological sodium chloride solution. The mere placing of the dogs in a cool room (where they do not pant) has been found to prevent the tetany which otherwise follows thyro-parathyroidectomy, the reason being that a dog, unable to perspire, can lose heat only through its respiratory tract, and when placed in a warm, humid room pants and develops acapnia and alkalaemia, which produce increased muscular tone and convulsions if the dog is predisposed by having a low blood calcium.

Not the least important purpose of breathing is the maintenance of the normal H-ion concentration of the blood. In conditions of clinical acidaemia an increase in this concentration stimulates the respiratory centre. A fatal acidaemia implies, as Rowntree has well expressed it, an H-ion concentration as "acid as distilled water," and a fatal alkalaemia one in which the blood is as "alkaline as tap-water." Acidaemia may be due to an increase in the H_2CO_3 or a decrease in the bicarbonate ($BHCO_3$); alkalaemia may be due to a fall in the H_2CO_3 or an increase in the bicarbonate.

Clinical Alkalaemia

Wright (1940) points out that there is a tendency towards alkalaemia when excessive breathing at rest occurs owing to voluntary hyperpnoea, to exposure to high temperature and humidity, to lack of oxygen, and, in some cases, to infantile diarrhoea and vomiting; also when the bicarbonate of the blood is increased owing to an overdose of bicarbonate or to pyloric or high intestinal obstruction. Alkalaemia may occur in heat-stroke caused by exposure to excessive humid heat. The body in such a condition attempts to lose heat by increased breathing, and the over-ventilation results in acapnia and alkalaemia. This may go on until the heat-regulating mechanism breaks down, the rise in temperature stimulates metabolism, heat production is still further increased, and a vicious circle is established (Fig. 1).

It is reasonably well established that voluntary over-ventilation causes a tendency to alkalaemia (Collip†), and hyperventilation during semi-open anaesthesia may cause acapnia and alkalaemia, a blood *p*H of 7.7 having been recorded (Adriani, 1942). It now remains to show how alkalaemia in the presence of normal blood Hb oxygenation—the usual finding in cases of deep ether convulsions—can cause tissue anoxia and con-

* That is, ordinary cryptogenic epilepsy occurring in patients not under anaesthesia.

† Personal communication.

vulsions. A consideration of the well-proved data summarized in the haemoglobin dissociation curve (Fig. 2) shows that when tissue activity is markedly increased and the O_2 tension of venous blood falls to 15 or 20 mm. Hg, the blood gives off 70 to 80% of its O_2, greatly increased quantities of which are thus supplied to the tisses. The presence of CO_2 lowers the

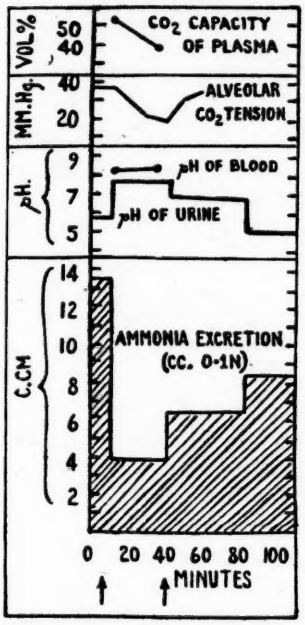

FIG. 1.—Effect of voluntary hyperpnoea on alveolar air, blood, and urine, showing compensatory reactions to alkalaemia. (Grant and Goldman, *Amer. J. Physiol.*, 1920.)

Abscissa.—Time in mins. *Ordinates.*—CO_2 capacity of plasma (bicarbonate content) in volumes of CO_2 per 100 c.cm. plasma. Alveolar CO_2 tension in mm. Hg. Reaction of blood and of urine expressed at *p*H; rise means increased alkalinity. Forced respiration begins at 10 mins. and ends at 38 mins. (period indicated by arrows). At 31 mins. tingling of foot; at 34 mins. Trousseau's sign present; at 35 mins. both hands in spontaneous spasm; at 36 mins. slight spasm of feet; at 42 mins. temporary dizziness and trembling of hands on standing up after period of forced respiration is over. Note that *p*H of blood rises in spite of compensatory reactions of kidney.

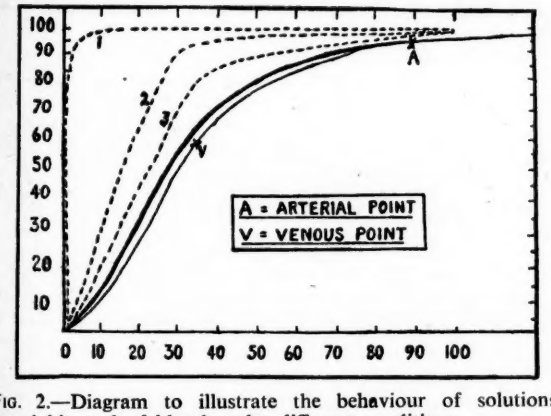

FIG. 2.—Diagram to illustrate the behaviour of solutions of haemoglobin and of blood under different conditions.

Abscissa.—Tension of oxygen in mm. Hg. *Ordinates.*—Percentage saturation of haemoglobin with oxygen. *Dotted lines.*—Haemoglobin solutions: (1) Room temperature and no CO_2 tension; (2) body temperature and no CO_2 tension; (3) body temperature and 20 mm. CO_2 tension. (After Barcroft.) *Continuous lines.*—Blood: Thick line—in presence of constant pressure of 40 mm. CO_2. Thin line—dissociation curve in body when disappearance of oxygen is accompanied by increase of CO_2 pressure which facilitates dissociation of haemoglobin. (After Haldane.)

From *Applied Physiology* (Wright).

threshold of OxyHb dissociation, and thus provides increased quantities of O_2 from venous blood. It would seem from a consideration of these data that a convulsion during ether anaesthesia is a defence effort on the part of the body temporarily to stop pulmonary respiration and exhalation of CO_2 and actually to create CO_2 and lactic acid by muscular action in order to correct the alkalaemia which causes failure of dissociation of OxyHb and the anoxia which in turn leads to inhibition of nerve-cell respiration.

Discussion

At least a dozen factors may influence and limit nerve-cell respiration during ether anaesthesia. These include low oxygen percentage in the inhaled atmosphere; physical obstruction of the patient's airway; subnormal tidal pulmonary exchange; decreased vital capacity; some barrier to normal diffusion between alveolar air and the blood in the pulmonary epithelium; failure in the O_2 transport system; disturbances of tissue respiration; excessive pre-operative pulmonary over-ventilation, and various pre-operative conditions. Furthermore, these also include many secondary or subsidiary contributing factors—as, for example, avitaminosis; prolonged vomiting; secondary anaemia; under-sedation, which allows fear to produce over-ventilation and a tendency to alkalaemia even before anaesthesia has begun. An open or semi-open method of ether administration, while it prevents free access of atmospheric air, allows a CO_2 deficit to be established, assisted by over-ventilation, and thus may be a contributory factor. The use of ether, in itself a respiratory stimulant, may cause over-ventilation and acapnia when Nature requires under-ventilation and CO_2 conservation: it also causes suppression of renal function, and thus the long-term mechanism of blood H-ion regulation is rendered inactive at a time when diuresis and alkali elimination are very much needed. During the administration of semi-open ether anaesthesia, unfortunately for the H-ion regulatory mechanism for controlled elimination through the kidney, the secretion of urine is inhibited by the antidiuretic hormone of the pituitary gland or by some other factor related to the anaesthetic, and no adjustment of the H-ion concentration of the blood can occur by the normal renal mechanism. As we have seen, the only remaining mechanism of H-ion adjustment—that of retardation of respiration—is frustrated by the forced respiratory stimulation attendant upon ether in the blood stream and the stimulating effects which fever, a moist and warm atmosphere, surgical trauma, and the several other factors, some of which are indicated above, have upon the breathing.

Thus a convulsion under ether anaesthesia may be inevitable because the two normal H-ion-regulating mechanisms are both inhibited or subjected to marked interference. There is nothing else for Nature to do but to "seize hold" of the situation and stop respirations and CO_2 loss by attempting a major epileptic seizure while at the same time producing more CO_2 and lactic acid by means of excessive muscular contractions in an effort to counteract the acapnia and alkalaemia which cause cerebral cell anoxias and convulsions.

Taylor (1940) has reported that in a total of 33,777 administrations of cyclopropane and oxygen in the Wisconsin General Hospital and at the Bellevue Hospital, New York, apnoea requiring respiratory stimulation occurred in 248 cases (0.7%) and convulsive movements in 39 cases (0.1%). As cyclopropane is always administered by a "closed" technique, usually in the presence of adequate oxygen, the occurrence of convulsive movements in 0.1% of these cases might be construed as an argument against the theory of acapnia and alkalaemia as the primary cause of convulsions under inhalation anaesthesia. A further study of available data, however, suggests that Taylor's statistics reinforce rather than refute the theory; but owing to lack of space this cannot be further developed here.

Treatment of Convulsions occurring during Anaesthesia

Treatment is primarily prophylactic, and consists in avoiding open and semi-open administration of ether, particularly when any of the secondary convulsion-producing factors enumerated above are present, and in avoiding large doses of local anaesthetic drugs. Before any operation the patient's urine is usually examined with particular attention to the question of albumin, casts, and white or red blood cells. This urinary investigation should also include a reasonably accurate report on the *p*H of the urine so that the anaesthetist would be warned of an incipient tendency to alkalaemia. In non-emergency cases the NH_3 excretion could also be reported with advantage, and for the same reason.

The actual treatment of the convulsions *per se* includes:

1. Immediate inhalation of 5% CO_2 and 95% O_2 by means of a face mask and rebreathing bag.

2. If this does not bring about cessation of convulsive movements within a few minutes, intravenous sodium pentothal in 2.5% or 5% solution (or hexobarbitone or sodium amytal) should be administered in addition to the inhalation therapy described above, and in a dosage adequate to control the convulsion.

3. As soon as the convulsion is brought under control an intravenous infusion of glucose-saline (10% glucose in normal saline) should be started for the purpose of promoting renal function and restoring the normal kidney mechanism of H-ion adjustment (that is, the elimination of excessive basic phosphates and bicarbonates *via* the urine). One litre of glucose-saline might well be given to an adult and 500 to 750 c.cm. to a child. Once the convulsion is under control the anaesthetic and operation may be continued, with the early termination of the latter always in mind.

4. If facilities are available the patient's blood *p*H and/or the *p*H of the urine should be checked within an hour after the convulsion ceases, and CO_2 and O_2 inhalations should be given to the point of hyperpnoea or for 5 minutes every half-hour until such time as the blood *p*H is below 7.5 or an acid urine is being secreted. The reaction of the urine is not as accurate an indication of alkalaemia as the blood *p*H.

5. Before the patient is returned to bed 2 to 3 dr. of ammonium chloride in six times that volume of water should be instilled by gastric tube into the stomach.

6. As soon as the patient is able to swallow he should be given cool drinks freely, but in small quantities at one time. The basis of the drinks should be physiological saline. Prior to this, rectal saline is indicated.

7. The patient must be kept cool—if possible, in an air-conditioned room; or, failing that, an electric fan may be played on face and torso.

8. If his temperature remains higher than 102° F. and the atmosphere is warm and possibly humid, a wet sheet may be placed on the patient's thorax and abdomen and a stream of air directed thereon from an electric fan.

9. If his temperature is persistently higher than 102° F. and respiration continues to be rapid, cold 5% glucose-saline enemata may be administered in addition to the measures mentioned above.

10. Inhalations of 5% CO_2 and 95% O_2 must be instituted on the first sign of any facial or other twitching.

Summary and Conclusions

Convulsions occurring during the administration of general or local anaesthetic drugs are primarily due to interference with or inhibition of cerebral cell respiration.

The interference or inhibition is usually caused by (i) frank anoxaemia; (ii) occult tissue anoxia due to alkalaemia and acapnia; or, as when local anaesthetic drugs are used, by (iii) the toxic action of the drugs inhibiting the oxidation-reduction enzymes of the tissues.

The principal treatment is prophylactic.

Emergency treatment is outlined.

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According to *Presse Médicale* the number of cases of venereal disease in France in 1942 increased by 55% over the figure for 1941. In the Beurmann dispensary 369 fresh cases of syphilis were seen, as against 214 in 1941. In the Department of the Loire the numbers of fresh cases of syphilis for the years 1938 to 1942 rose as follows: 47, 60, 93, 126, and 193.

HYSTERICAL SEQUELAE OF INJURIES

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There is a general appreciation of the influence of hysterical mechanisms in prolonging and intensifying all kinds of illness, mental and physical, in Service patients. Where symptoms persist, although there is no longer any evidence of organic disease, the possibility of hysterical prolongation is seldom overlooked. On the other hand, where abnormal physical signs persist despite thorough and rational treatment (especially if these signs are definite and striking) psychogenic factors are apt to be neglected. This neglect, with the resulting delay in diagnosis, may be due, in part, to the relative rarity of conversion symptoms in this war compared with the last.

Many factors have probably contributed to the decline in the incidence of hysteria as a primary diagnosis and of conversion symptoms in particular. Of these, the reorientation of psychiatric opinion that has taken place in the intervening years is perhaps one of the most important. It can scarcely be doubted that the form of many hysterical manifestations was largely the product of medical expectation and of medical examinations carried out with preconceived ideas. The search for definite hysterical symptoms and specific hysterical "stigmata" has given place to psychobiological methods with their emphasis upon the assessment of the total personality. For example, as has been pointed out by Stephenson and Cameron (1943), the general recognition of the anxiety state, the early diagnosis of this condition, and its acceptance as an illness requiring and amenable to treatment have tended to make the development of gross physical symptoms, as it were, unnecessary.

Case Material

The present paper is concerned with a series of six cases, all of which were admitted to this hospital during one quarter in 1943, in which a striking and distinctive hysterical disability followed injury to the hand or arm. The clinical picture—a cold, blue, weak hand with impaired superficial sensibility—was rarely enough encountered in an annual turnover of some 1,400 neuropsychiatric admissions to make the series a memorable one. There can have been no possibility of contagion, since all the cases developed in widely separated units or establishments. The following clinical features were shown by the series as a whole:

In all six cases the hand was cold, subjectively and objectively, and cyanosed; power was markedly impaired; the skin was soft and shiny. In five of the cases superficial sensibility was impaired or abolished up to a line round the long axis of the limb (in the sixth case the area of diminished sensibility corresponded with the distribution of the ulnar nerve). In four of the cases frank swelling of the hand was present. Disturbances of sweat secretion were spontaneously reported: "It does not seem to sweat properly"; "It sweats more and feels either very hot or very cold"; "It sweats more"; "Seems dry." The finger-nails were abnormal—in two cases they were thickened, and in two others badly bitten. Repeated injury to the limb had occurred; plaster-of-Paris immobilization had been employed (three of these cases had fractures). In three of the cases there was immobility of interphalangeal or metacarpo-phalangeal joints due to muscular spasm; and spontaneous pain, described as burning or cramp-like, variable in site and intensity.

It is noteworthy that in five of the cases manual dexterity of a rather high order was an essential requirement for carrying out the rating's special duties.

Case 1 (Wireman, aged 22).—In July, 1942, this rating fell and dislocated his right elbow. Reduction of the dislocation was followed by limitation of movement at the elbow for some months. In Jan., 1943, after a second fall on to the same elbow, movements again became limited and painful. Detachment of the common extensor origin was demonstrated radiologically, and this was successfully

replaced at operation on Feb. 2. He was then treated with plaster-of-Paris immobilization and an arm-sling for five weeks. At the end of this period there was almost complete loss of voluntary movement in the elbow, wrist, and hand, and he could not abduct the arm at the shoulder. In addition the hand was cold, blue, and slightly swollen. Sensibility to cotton-wool and pin-prick was absent up to a line around the middle of the forearm. This condition persisted until the middle of March, at which time all the muscles gave normal electrical reactions; but he would not use the arm or hand even to feed himself, and the diagnosis of hysterical prolongation of a healed injury to the elbow was made. Full voluntary movements were regained in one session of explanation and persuasion; exercises and P.T. were given for three weeks, when he was discharged to duty with no residual disability.

Case 2 (Able Seaman, aged 25).—This rating broke his leg in 1934 and recovered without any residual disability. In 1939 he injured his left hand, which became swollen. He was told that he "had a ganglion" and was given four months' light duty, thus missing his ship. The hand returned to normal during this period. In Aug., 1942, a 4-in. shell fell on to the back of his left hand. Pain and swelling followed, but there was no bone injury. The hand was immobilized in plaster for five weeks, after which, in spite of intensive physiotherapy, it became cold, blue, and swollen up to a line two inches above the wrist. The radial artery pulsated normally, but capillary return in the hand was sluggish. The hand felt stiff, and movements were weak and slow. Superficial sensibility was impaired in a patchy fashion, approximately over the glove area; the upper limit of the impairment coincided with that of the cyanosis and swelling. The nails were thickened and the hand was dry and cold to the touch. He said that when the hand warmed up it did not seem to sweat properly. He also complained of burning pain, mainly in the third finger. Eight months after the injury a diagnosis of hysteria was made, and a month later, following explanation, persuasion, exercises, and physiotherapy, he was discharged to duty with a normal hand.

Case 3 (Leading Wireman, aged 24).—In March, 1941, this man sustained a left Colles fracture with fracture of the scaphoid. Good union was secured after five months' immobilization in plaster-of-Paris. Pain and numbness persisted in the wrist, but he was able to carry out full duties. In June, 1942, a second accident caused the scaphoid to be fractured again; once more good union was obtained by immobilization in plaster. Convalescence was prolonged owing to persistent pain and numbness of the wrist and hand, which became cold, blue, shiny, and swollen, with thickening of the nails and loss of sensibility to cotton-wool and pin-prick of glove distribution. All movements of the hand were equally weak, but there was no muscular wasting. A diagnosis of hysteria was made nine months after the second injury; five weeks later he was discharged to duty with a normally functioning hand and symptom-free.

Case 4 (Air-fitter, aged 22).—This right-handed rating had a congenital deformity of his right hand (fusion of the fourth and fifth metacarpals and of the lunate and hamate bones). He had been self-conscious about the deformity since boyhood, but it had caused no disability until, at the age of 17, he began to experience difficulty in performing fine movements with the hand and started to use his left hand for writing. He joined the Navy in Jan., 1940, and stood up to a long period of arduous and dangerous service in aircraft carriers, managing to perform his duties without too much difficulty, although still using his left hand more than his right. In Aug., 1942, during severe enemy action, his right hand was caught between a shell and a bulkhead. The injury was slight, causing a small bruise, but from this time he became unable to hold anything in his right hand, which subjectively felt cold and was held in the "claw" position. On this account he was drafted ashore, where the symptoms improved a little until he was required to work on and accept responsibility for the servicing of a type of aircraft which was new to him. He said: "I can't work on fighter aircraft, because my hand goes stiff; I might make a slip-up and get into serious trouble." On admission to this hospital in May, 1943, his right hand was cold, blue, and showed typical glove anaesthesia; the fingers were held in the "claw" position with the thumb adducted. The grip was weak and there was a spasm of the antagonists. A diagnosis of hysteria was made, and after one week's treatment he was writing well with his right hand (for the first time for five years) and had good insight. He was discharged to duty.

Case 5 (Petty Officer Motor Mechanic, aged 25).—Two days after he joined the Navy in Aug., 1940, an accident occurred in which he fractured his left elbow, which was immobilized in plaster for eight weeks. Uninterrupted recovery ensued. In June, 1941, soon after joining a motor attack craft, he had to be drafted ashore because, when working below decks at sea, he became anxious and complained of dizziness, weakness, nausea, and excessive sweating. In Oct., 1942, his right arm was crushed between two boats, the shaft of the ulna being fractured. The arm was immobilized in plaster for about four months. On removal of the plaster the arm was weak and movement at the elbow limited. Attempts to move the arm were painful. Three months later he still complained of pain in the forearm and of stiffness of the elbow, which was then fixed in full flexion by muscle spasm. Hand movements were very weak and painful. The hand was cyanosed and the skin soft and moist. There was impairment of superficial sensibility of glove distribution. The nails were badly bitten. The right hand sweated more than the left and felt subjectively either very hot or very cold. A diagnosis of hysteria was made seven months after the injury; fourteen days later, during which he received psychotherapy, full function was restored and the signs and symptoms had disappeared. He was then discharged to duty.

Case 6 (Sick-berth Attendant, aged 33).—In Aug., 1942, he received shrapnel wounds while serving in a landing craft engaged in the Dieppe raid. One tiny fragment pierced the dorsal aspect of his right hand, where it remains, causing no symptoms. A second small fragment passed superficially to the right ulnar nerve from left to right, lodging in front of the internal epicondyle of the humerus. Healing of the wounds was rapid and complete, but the right hand and wrist became "completely paralysed," and the ulnar side of the hand and wrist was tender on pressure and spontaneously painful. A month later he complained of burning pain, numbness, and tingling of the ulnar side of the hand. He could not extend the fourth and fifth fingers, and passive extension caused pain. The fingers could not be adducted to the third finger. The ulnar nerve was felt to be thickened at the elbow. All movements of the hand were weak, but there was no appreciable wasting. Flexor carpi ulnaris, palmaris brevis, adductor pollicis, interossei, and lumbricals responded normally to faradic and galvanic stimulation, but the fifth tendon of flexor digitorum profundus did not respond to faradism. Sensibility to cotton-wool and pin-prick was diminished in the distribution of the ulnar nerve. The hypothenar eminence was tender on pressure. The whole hand was swollen up to the level of the proximal wrist crease. It was cold and cyanosed and the skin was shiny. Sometimes the hand was found to be sweating more than the left. The finger-nails were bitten. A diagnosis of concussion of the ulnar nerve was made and physiotherapy was given, but without improvement. By Feb., 1943, the condition was worse, and the fourth and fifth fingers were so flexed upon the palm as to resemble a Dupuytren's contracture. At this time his attitude towards his symptoms was very complacent; he displayed an amused and faintly contemptuous tolerance of the attempts that were made to treat his hand. His knowledge of the presence of an organic lesion and of its nature made psychotherapy the more difficult; but one month after psychotherapy was started he had become co-operative, showed fair insight, and had a hand normal in function and appearance, with full extension of the fingers. Some tenderness on pressure over the hypothenar eminence remained. He was then discharged to duty.

Diagnosis

This will be considered under three headings:

1. Physical Signs and Symptoms

The principal features have been enumerated above. In all the cases recovery from the original injury had proceeded beyond the point when the residual disability could be directly attributed to it. The uniformity of the physical signs was remarkable, and the clinical picture, when seen, was distinctive enough to bring hysteria to mind at once in the consideration of the differential diagnosis of any similar condition. The striking vasomotor disturbances led, before the diagnosis had been established, to a proposal to perform sympathectomy in Cases 2, 3, and 6. Tests were done in order to assess the probable efficacy of this measure. In Cases 2 and 6 an injection of novocain was made into the stellate ganglion, with immediate temporary relief of symptoms together with the production of a Horner's syndrome.

Physical findings which suggested a "functional" origin were: normal electrical reactions of the muscles; the typical "glove" distribution of the anaesthesia; spasm of the antagonist muscles; absence of appreciable wasting; and the exclusion of arterial disease, arthritis, and the major endocrine and neurological disorders, such as syringomyelia and tabes, in which trophic changes in the hands are known to occur.

There remained for consideration the so-called vasomotor neuroses, or "angioneuroses." To these conditions our cases presented certain similarities. Of the more familiar of them, however, Raynaud's phenomena are characteristically paroxysmal, bilateral, and induced by cold; while erythromelalgia—first described by Weir Mitchell in a sailor—has a disputed pathology in which it is perhaps possible that psychogenesis sometimes plays a part. It is said to occur more commonly in the feet than in the hands, and pain is a more pronounced

feature than it was in our cases. The onset following trauma, the marked sensory and motor loss, and the readily demonstrated hysterical motivation (see below) served further to distinguish our group. There is a possibility that hysteria is too seldom considered in the differential diagnosis of vasomotor disturbances. In a recent discussion at the Royal Society of Medicine on "Immersion Injuries and Vasomotor Disorders of the Limbs in Wartime" (*Proc. roy. Soc. Med.*, 1943) no mention was made of psychogenic disorders such as those described here.

2. Response to Treatment

In all the cases improvement had ceased with physical methods of treatment employed alone.

Case 1.—Relatively little time elapsed between the removal of the plaster and the diagnosis of hysterical paralysis. Psychotherapy of a very simple kind, combined with active exercises, resulted in complete recovery in three weeks.

Case 2.—The hand was immobilized for five weeks (there was no fracture); symptoms persisted, but the diagnosis of hysteria was not made until seven months later. Psychotherapy was then begun, and recovery followed in one month.

Case 3.—The diagnosis of hysteria was made nine months after the injury. Recovery followed after five weeks of psychotherapy.

Case 4.—Here the injury was slight and immobilization was not required. The symptoms were severe. The diagnosis was made nine months afterwards, but psychological treatment for one week enabled the patient to write with his deformed hand for the first time for five years, and he was discharged to duty in 2½ weeks.

Case 5.—The diagnosis was made seven months after the injury. Complete recovery was obtained after a fortnight's psychotherapy.

Case 6.—The diagnosis was made six months after the injury. Complete recovery, apart from a very slight organic residuum, was obtained after one month's psychotherapy.

The basis of treatment was to obtain the patient's confidence and co-operation. The formal psychotherapeutic procedures comprised explanation, persuasion, and suggestion. Re-education and physiotherapy were given at the same time, with certain precautions; the physiotherapist was instructed to "make the patient do all the work," not to discuss the symptoms, and not to use any form of passive treatment, particularly faradic baths, which had been found always to make the symptoms worse. Occupational therapy was arranged to suit the interests of the individual—e.g., in Case 2 boxing was prescribed.

Most of these patients made rapid progress up to a certain point and then "hung fire." At this point they had to be driven hard, and sometimes were subjected to a restriction of their privileges. In all cases these measures were successful, although in Case 6 a threat of transfer to a disciplinary rehabilitation centre was required. In this case, also, continuous traction by means of elastic and plaster-of-Paris was needed to reduce the secondary contracture. Later the normal hand was immobilized for a short time in order to encourage the patient to use the affected one. It was found useful to obtain, for a three-cornered discussion, the voluntary co-operation of one of the group who was improving satisfactorily with one who was lagging behind.

3. Motivation

The Committee on Head Injuries of the Medical Research Council (1941) has defined hysteria as "a condition in which mental and physical symptoms, not of organic origin, are produced and maintained by motives never fully conscious, directed at some real or fancied gain to be derived from these symptoms." While the mere absence of a physical basis for complaints is insufficient, and the demonstration of an adequate personal motive is one of the most important of the positive criteria for a diagnosis of hysteria, it need hardly be pointed out that many a severely wounded or physically ill man has as good reason as the suspected neurotic to wish to avoid returning to the dangers and discomforts of active warfare. The discovery of a motive, such as the wish to be invalided from the Service, is by no means pathognomonic of hysteria; the demonstration of previous neurotic traits, of excessive dependency and emotional immaturity, of underlying anxiety, of a "neurotic" attitude towards symptoms or treatment, and of other neurotic features in the personality may provide helpful confirmatory evidence. In none of the cases under discussion was the motivation in the least obscure. If it is objected that a more prolonged inquiry would have revealed other important psychopathological material, our answer must be that psychotherapy based upon data elicited by the routine methods of psychiatric history-taking and examination enabled all six men to return to duty in a reasonably short time with some insight and with a will to carry on.

Case 1.—This man was a simple, stable Scotsman whose personality and past history were free from psychopathic features. After his first injury, movements of the elbow-joint had been very painful, and he had avoided using it so far as was possible, although, since he was back at duty, a good deal of pain was inevitable. The second injury, which resulted in the detachment of the common extensor origin, occurred before movement of the elbow had become painless and before he had regained confidence in it. This injury caused movements to become still more painful, and the hysterical prolongation of the immobilization by plaster was motivated by fear of renewing the pain. He accepted this explanation; he had no wish to leave the Navy, and, once he had been shown that movements were in fact no longer painful, he worked hard to become fit for duty.

Case 2.—This patient had experienced prolonged and severe stress in Russian and Malta convoys, including the torpedoing of his ship. His special duties as a member of the crew of an A.A. gun entailed much use of his left hand. He was worried about the safety of his wife, who was living in a target area, and he frankly said: "I think I have done my bit for this war." Three years previously, as the result of an injury to the same hand, he had been given four months' shore service and missed his ship. The second injury was taken more seriously; the hand was put in plaster for five weeks. It was not surprising, in view of the long strain and repeated enemy actions to which he had been subjected and the concession he had gained before from an apparently less serious injury, that the second injury should have been used hysterically to postpone his return to sea. The personality was extroverted and sound.

Case 3.—This man's parents had both had neurotic breakdowns, but he himself had shown no evidence of instability, although slightly backward at school. He had been a farm worker and was keen to go back to the land. After twice breaking his wrist, with an interval of fifteen months during which he was at duty, he developed a hysterical prolongation of the second injury, motivated by his desire to be invalided from the Navy. This desire was reinforced by the knowledge that since he had enlisted his job had been made "reserved." His co-operation was obtained, and he accepted his obligation to serve until the end of the war.

Case 4.—In this case a congenital deformity of the hand, of which he had always been rather ashamed, acted as a locus minoris resistentiae following a slight injury which occurred during a period of extreme emotional tension and danger. When he was drafted ashore on account of the ensuing disability the persistent anxiety was transferred to his new work—the responsible duty of servicing an unfamiliar type of aircraft. For him a hysterical disability provided a respite from danger and from responsibilities which had provoked a mild but persistent affective disturbance in a vulnerable personality.

Case 5.—This man was a long-standing neurotic. He had been a bed-wetter and had had nightmares up to the age of 11 years. He was a chronic nail-biter. At home he had often been in minor trouble: "I always preferred to go my own way." His work record was satisfactory, but he had fainted once while at work, and was kept in hospital for three weeks afterwards. He was prone to headaches and attacks of "tightness" in the chest associated with much belching; these symptoms were worse on exertion, but not related to food. He developed marked anxiety symptoms almost immediately after joining his ship, and had therefore to be drafted ashore. Here he worked well enough until he met with an accident, in which his right ulna was fractured. He was a man with a defective health-conscience, in whom hysterical prolongation, as a means of avoiding the anxieties and discomforts of active service, could probably have been predicted soon after he sustained his injury.

Case 6.—This man received a nerve injury during a most dangerous action. He had never been to sea before, but had worked satisfactorily in hospital as a sick-berth attendant. This alarming "baptism of fire," coupled with several superficial shrapnel wounds and a temporary ulnar paresis, made him wish to gain an honourable discharge from the Navy. He felt that he had earned this, and he acquired an exact knowledge of the symptomatology of ulnar nerve lesions. He showed the complacency, the power of self-deception, and the logical inconsistencies which are characteristic of the hysterical personality. He had worked in a bank, and although he felt unable to do any kind of work in the Service owing to his disabled right hand (his writing hand), he believed that he could carry out his duties without too much difficulty if he were allowed to return to the bank. As he said, "My manager has only one arm!"

The Influence of Personality on Prognosis

Two further cases will be briefly described in which psychopathic defects in the personality adversely affected the prognosis. In neither had there been any injury, but the clinical picture did not differ materially from that described above; in both the condition was recurrent. In one case the left hand was affected, in the other the right leg and foot. These two cases were admitted in 1940 and 1942 respectively.

Case 7 (Ordinary Seaman, aged 29).—This man came of a Naval family. His father was a Royal Marine pensioner and all his seven brothers were in the Navy. His mother had had several attacks of hysterical paralysis of the hand. He was brought up to join the Navy; no alternative was ever considered. He first joined in 1926, at the age of 15. He disliked the life from the beginning and never settled down, but the family tradition prevented his seeking his discharge. In 1930 his left hand, in the course of a few days, became swollen, painful, and weak. After nineteen weeks in hospital without improvement he was invalided from the Service. He was ostracized by his family and made unwelcome at home. Six months later, his hand having fully recovered, he rejoined in order to be accepted once more by his father and brothers. He concealed his previous invaliding for a time, but after a few weeks it was discovered and he was discharged as a fraudulent entry. Again he was disowned, but a transient recurrence of swelling, pain, and weakness of the left hand three or four times each year prevented his attempting to join the Navy again. He married, and for the next ten years, with his recurring disability as a face-saver, he was able to lead a restricted and lonely life, making no friends and cut off from his family. In Aug., 1940, he rejoined the Navy, but again found that he could not adapt himself to the life, and early in November his left hand became swollen, painful, cyanosed, and weak. He was admitted to hospital with the provisional diagnosis of "subacute rheumatism." Temperature, pulse, sedimentation rate, and radiographs of the hand were normal; there was no cervical rib. Physiotherapy, salicylates, and colchicum brought no improvement, and, in view of the long history and inadequate personality, psychotherapy was not attempted. He showed a marked emotional immaturity and dependency, being still strongly attached to his family, had a violent temper, and had frequently "fainted" at the sight of blood or on experiencing trivial pain. He was invalided as a case of hysteria.

Case 8 (Ordinary Seaman, aged 36).—This man's father was invalided from the Navy after the last war for neurasthenia. He was an anxious, depressive, ineffectual person with vague aspirations to become a teacher, although he took no steps to attain this end. He had for the past ten years earned three guineas a week as a pepper-grinder. In 1938, at a time when he was in financial difficulties which culminated in bankruptcy, his right leg "suddenly gave way" as he was rising from his chair, and he fell to the ground. He could move the leg, but it would not bear his weight. He did not see a doctor, but remained in bed for one month. He then began to get about, but complained of cramp-like pains in the calf if he walked above half a mile or if he climbed more than a few stairs. The pain would disappear after he had rested for some quarter of an hour, but the leg remained weak. Meanwhile, as he felt unable to go out, his wife attended to the bankruptcy proceedings, and for the time being relieved him of all responsibility. After a few months his leg ceased to give him any trouble, although he noticed that it had become, and remained, a little "thinner" than the left.

When he joined the Navy in Sept., 1941, he attempted to gain rapid promotion to petty officer by taking a trade test in engineering. He failed in the test and was bitterly disappointed at having to revert to "menial" tasks and less comfortable living conditions. His right leg again gave way, but recovered when he was drafted to another establishment to await a refresher course before attempting the test again. He felt, however, that he would not be successful. He obtained week-end leave, and his leg gave way once more as he left the train after completing his journey home. He was taken to his house and put to bed. Thence, in Jan., 1942, he was moved to a civilian hospital, where a diagnosis of thrombo-angiitis obliterans was made and intensive physiotherapy was given without improvement. In March he was transferred to a Naval hospital; here the condition was considered by the medical specialist to be hysterical, and he was transferred to this unit.

On examination there was wasting to the extent of 1½ in. in the right thigh and 1 in. in the right calf. There was extreme weakness of the leg, and he walked with impressive difficulty on two crutches, which he was persuaded reluctantly to abandon. The foot was cold and blue, and trophic changes were beginning in the skin. No sensory changes were found, although inconstant areas of diminished sensibility had been recorded previously. There were no signs of organic disease in the C.N.S., and in both feet the dorsalis pedis artery pulsated normally. The C.S.F. was normal, the Wassermann reaction was negative in the blood, and there was no evidence of arteriosclerosis. The left leg and foot were normal.

Here again, in view of the psychopathic setting and the probability of relapse, psychotherapy within the Service was considered unlikely to be effective or worth while. He was invalided as a case of hysteria and was offered further treatment in an E.M.S. neurosis centre. He preferred, however, to return home, as he felt that he would "pick up" quicker there and be able to earn his living sooner.

Conclusions and Summary

A group of cases is described in which physical symptoms and signs of a distinctive character, hysterically produced or maintained, served greatly to prolong convalescence in six Naval ratings who had received injuries to the hand or arm. The importance of the early recognition of such psychogenic complications is shown by the rapid response to psychological treatment of a relatively simple kind, which was followed in all six cases by return to duty. The diagnostic criteria are discussed under three headings: (1) the physical findings; (2) the failure of physical methods alone and the good response to psychotherapy; (3) the demonstration, by the routine procedure of psychiatric history-taking and examination, of hysterical motivation. It is possible that psychogenic factors are sometimes overlooked in the differential diagnosis of vasomotor disorders.

Prognosis depends very largely upon the personality setting in which the hysterical symptoms occur. Two cases are described in which similar physical symptoms developed without previous injury or severe stress. In these patients the personality was markedly psychopathic, and similar illnesses had ocurred in civilian life. Both these men were invalided from the Service.

The lay connotations of the term "hysteria" and the social worthlessness of many hysterics have given rise, understandably enough, to adverse moral judgments. These, however, are not justified in all cases of hysteria, and effective treatment, as well as justice, demands that a careful discrimination should be made.

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CHRONIC PULMONARY CATARRH IN CHILDHOOD

BY

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The varying manifestations of recurrent non-specific respiratory infection occurring especially in childhood allow of numerous names and diagnoses being given. Chronic pulmonary catarrh represents a very large proportion of these cases, and this term also usefully describes the condition in the majority. Leys (1927) introduced this name, and his monograph dealt fully with the bibliography and history. He found descriptions of numerous chronic or subacute infective pulmonary conditions under various names which could most satisfactorily be grouped together by this term, which describes the clinical state concisely and usefully. This does not seem to have been adequately noticed, and textbooks and the like do not appear to recognize this common and troublesome condition.

During 1942 there attended my asthma clinic at the General Hospital, Birmingham, 63 children under the age of 14. Most were sent up by their doctors with the general diagnosis of asthma, others for investigation of recurrent bronchitis and persistent or recurrent coughs. In only 12 of these cases did it seem that the condition was a true allergic asthma, the criteria being the previous occurrence of infantile eczema, direct relationship between the attacks and foreign proteins, freedom from respiratory symptoms and signs between attacks, greater frequency in summer months, normal lungs physically

and radiologically, and response to adrenaline and/or ephedrine. The remaining 51 were examples of chronic pulmonary catarrh, their first diagnosis being variously asthma, recurrent bronchitis, recurrent coughs and colds, etc. In a further group of 38 children, also under 14, seen in private practice for similar symptoms, 33 showed evidence of recurrent catarrhal infections of the respiratory passages, only 5 being cases of true allergic asthma.

The problems of true asthma in childhood have recently been dealt with in this *Journal* (Hurst, 1943, etc.) and numerous papers on the question of allergy have been published—e.g., Bray (1930).

While, doubtless, many asthmatics can be classed in the various groups of allergy, so to regard all of them leads to much disappointment. Skin testing may show sensitivity to proteins, but these are usually so varied as to make the knowledge of little value, whereas many others show no positive reactions at all. Chronic pulmonary catarrh appears to be the chief factor in the majority of the more or less non-allergic cases, and of the present group of 101 children 84 had associated underlying respiratory infections. Recurrent colds or upper respiratory catarrhs were followed by generalized pulmonary effects—coughing, tight chest, wheeziness, and more or less "asthma." In other cases persistence of cough was the most troublesome complaint. Most of the children seemed to show an increased susceptibility to respiratory infections, or else had a chronic infection which was lighted up by unduly trivial circumstances such as changes of weather, exposure to cold winds, damp, fog, rain; and all the attacks were more frequent during the winter and early spring months. Cameron (1926) has emphasized this type of "catarrhal child."

An impression has also developed that with the continuance of the war the natural improvement usually occurring in the spring and summer has been delayed or impeded, suggesting an underlying slight degree of hypovitaminosis or fatigue. During the period of heavy air-raiding the use of air-raid shelters was also evidently detrimental. Geographical effects have been noted in the aetiology: the plateau on which Birmingham stands is 450 to 550 feet above sea-level, far inland, and exposed to south-westerly winds, and the soil is largely clay.

Clinical Features

The clinical picture of the attack varies greatly. In some children it is mild, and is referred to as a bronchial cold with slight pyrexia and cough; in others the asthmatic features are predominant, with laboured wheezy breathing and prolonged difficult expiration. In another group a mild pneumonic attack seems to occur. The duration and termination also vary considerably, though the slowness of resolution and of disappearance of cough is most noticeable. The acute asthma picture often lasts several days and is followed by persistent wheezing and a cough, especially troublesome at night or increased by exertion with extra respiratory activity. The physical signs during the attack also vary and are not pathognomonic. Prolonged expiration is usual, but rapid shallow breathing is not uncommon. Rales and rhonchi may be heard anywhere, but especially posteriorly, and, significantly, they are almost always bilateral.

Between the attacks the child may be quite well, but one usually finds shallow breathing, poor development of the thorax as evidenced by round shoulders, flattening anteriorly and Harrison's sulcus, and coughing after deep breathing or exertion. Pharyngitis is often present as well, and large infected tonsils and post-nasal catarrh may be seen. These are certainly not always present; and often they have been treated, but without the expected recovery. While it is desirable to remove chronic upper respiratory infection, many parents are disappointed by the failure of such treatment to prevent the recurrent pulmonary attacks.

X-ray Appearances

Radiographic changes are common. The movements of the diaphragm are usually restricted. In the cases with an asthma tendency the thoracic cage is deformed, the ribs having an upward tendency from the excessive inspiratory efforts. The chest, too, tends to rise on inspiration instead of expanding. The lung roots are unduly heavy, suggesting glandular enlargement. The striations radiating therefrom are thick and increased, especially to the lower lobes, but often into all zones. The lung parenchyma itself may have a slightly woolly appearance. One of the most important points is the bilateral and symmetrical nature of the changes. During or immediately following an acute exacerbation there may be shadows of pneumonic consolidation in individual parts of the lungs, and films taken a few weeks later show these to have disappeared.

Bronchograms show normal bronchi. Occasionally bronchiectasis may simulate or complicate chronic pulmonary catarrh, but, in the group of cases that this paper is meant to illustrate, distortion or dilatation of the bronchi has not been noticed. Bronchography has been carried out on four of the cases in this series and on others, sometimes as part of the routine investigation and at other times when rales have persisted between attacks or when there has been more copious sputum. Clubbing is unusual.

Diagnosis

A number of cases have been tested with tuberculin, usually by the Mantoux, and the results are not different from what one would expect in their age group. In considering the diagnosis two points arise: first, the question of nomenclature; secondly, the differential diagnosis. Leys (1927) in his exhaustive monograph has reviewed the historical aspect and shown how the term "chronic pulmonary catarrh" usefully describes this common condition, which numerous authorities have seemed to diagnose under fibrosis of the lungs, fibroid lung, recurrent bronchitis, unresolved pneumonia, interstitial pneumonia, chronic bronchopneumonia, peribronchitis, and so on. Few necropsies have been recorded, and though chronic inflammation and fibrosis occur, it seems more desirable to use a clinical appellation rather than a purely pathological term.

Differential diagnosis has to be made from true allergic asthma, which has already been discussed; and also from bronchiectasis and tuberculosis, both of which have in the past been commonly mistaken for chronic pulmonary catarrh. The former is marked by the exudative nature of the symptoms, and the sputum persists and is purulent between the attacks. Bronchography easily decides the presence or not of dilatation, but now that one can correct clinical impressions thereby it is evident that the two conditions produce quite different pictures. Tuberculosis is often suspected, but the course of this disease has usually not the intermittent character, chronicity over years, and marked effect on the rate and quality of breathing. Radiologically the appearances may be similar, but the lesion in tuberculosis is especially in the parenchyma of one lung, whereas the catarrhal lesions affect the bronchi and bronchioles. The tuberculin test will often help to decide the issue if there is doubt, especially in children. Macpherson (1943) has shown the incidence of a positive Mantoux reaction in children, and under the age of 14 years it can be of great value.

True asthma is often difficult to distinguish. During an acute attack the symptoms and signs are the same—whether the result of spasm of the bronchiolar muscles or of oedema and congestion of the bronchiolar mucous membrane. A negative result from skin tests, no history of other allergic manifestations previously or in the parents, the definite relationship to catarrhal conditions of the throat, the slower recovery, persistence of signs between attacks, radiological changes, and lack of response to adrenaline and ephedrine are among the critical features of chronic pulmonary catarrh.

Treatment

In the acute attack treatment is that of acute bronchitis, asthma, or pneumonia, depending on the predominant features. On the other hand, the important thing is to reduce the frequency of the attacks and to limit the permanent damage that may result. Frequent and prolonged absence from school and increasing pulmonary fibrosis and emphysema may damage the prospects of these children very materially. There is no doubt that climatic measures can give the best results. In peacetime, wintering in Switzerland for several years has proved most satisfactory. There seems to be a tendency to grow out of the condition, or at least the susceptibility to it is

the child reaches adolescence; and if the ill effects can be prevented by avoiding the attacks for some years, much of the danger has gone. Other warm dry climates abroad are available, but economic as well as international difficulties preclude their help. In England the south and south-west coasts are valuable, but many inland districts are also reliable. From Birmingham many parents send their children to school in the Malvern district, and this relieves the majority. Open-air schools of the local authorities are also beneficial, particularly when they are found in sandy, sheltered, and warm situations.

In wartime especially, these measures are largely impracticable. Also, parents at any time are often loath to part with their children in their early years, and especially when they are delicate. For these cases breathing exercises have been found of extreme value. Their use has been increasing steadily in recent years, especially with the greater knowledge of the mechanism and physiology of the respiratory apparatus. Hurst (1927) has clearly described the main points, and the Asthma Research Council (1934) has also helped to popularize them. Livingstone and Gillespie (1935) have published some results which indicate their value.

The principal points required are to correct faulty posture and movement of the thoracic cage, to promote diaphragmatic movement, to increase respiratory excursion and resilience, and to improve expiration. Douthwaite (1930) has also indicated these points. There is no doubt that the disciplinary effect of these regular exercises is in itself of much benefit, and at the same time insistence on nose-breathing can obviate much of the reinfection and recrudescence of infection from the pharynx.

Teaching the exercises to the children may be done in a group, and I have a clinic at the General Hospital under the charge of Mrs. Brown, head of the massage department. This has the advantage of stimulating the team spirit and encouraging regularity, and of initiating new patients. The alternative is treatment individually, or perhaps in pairs. It is then easier to arrange times to avoid school hours, and with some of the more nervous or difficult children better control is obtained. It is essential that the exercises should be done regularly and daily, and regular supervision by the masseuse makes a great difference in keeping them correct and adequate. At my clinic the children attend twice weekly, and the mothers are also taught the exercises so as to make the children do them on the other days. It is essential to continue the treatment for months or years, and most failures or relapses are due to leaving them off too soon or to want of care in doing them regularly and persistently. The results are seen rapidly. The frequency of the acute attacks is reduced; the attacks are shorter; between the attacks the child is better, healthier in general, loses its cough, and becomes less susceptible to catarrhal infections. The condition seems to diminish naturally as the child grows up, but adequate treatment usually relieves it sooner, and so reduces invalidism and loss of schooling; also it obviates most of the permanent ill effects that may follow, such as chronic bronchitis, emphysema, and fibrosis of the lungs.

The general management of the child must also be watched and clothing and exercise be adjusted. Feeding is often difficult, but common-sense management is needed, especially as these patients can often be classed among the "nervous child" group (Cameron, 1929). As Cameron points out, the nervous child is particularly prone to catarrhal infections, whether from a lack of immunity due to chronic upper respiratory infection or from weak vasomotor defences. It is always necessary to remember the neuropathic tendency associated with most cases of asthma, recurring pulmonary infections, and the like. It is important, as Hurst has emphasized, that the child should not think he is an invalid.

Summary

The term "chronic pulmonary catarrh" describes a clinical syndrome common in children, causing recurrent respiratory "attacks," often suggesting asthma, but associated with inflammatory changes in the lungs. They cause much trouble to the parents and interfere with the child's development.

The symptoms, signs, and *x*-ray changes are described.

Treatment is most satisfactory by climatic measures, but, at the present time especially, breathing exercises are proving very valuable and will relieve the majority of cases. It is essential that they should be controlled competently and be continued over a prolonged period.

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SURVEY OF VITAMIN C LEVEL IN WARTIME IN PREGNANT WOMEN

BY

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The question of vitamin deficiency in wartime is one which is often under discussion. Vitamin C has perhaps excited the most interest because of the lack of fresh fruit and, to some extent, vegetables in present-day diet. Though the clinical symptoms of scurvy, which is the typical manifestation of vitamin C deficiency, may be absent, it is becoming recognized more and more that subclinical deficiency may be present to give rise to other less definite symptoms. The normal requirements of the body in order to prevent scurvy are usually stated to be 25 mg. of vitamin C a day, though Codvelle *et al.* (1938) believe the real needs of the body to be 100 mg. daily. Glazebrook and Thomson (1942), in their investigation on boys with tonsillitis, found that a supplementary dose of vitamin C to the normal diet reduced the duration of the disease. None of these boys, moreover, developed rheumatism or pneumonia, as did a small percentage of controls not receiving the supplementary dose. It would appear, therefore, that a higher dose than 25 mg. daily would prove beneficial to the maintenance of good health.

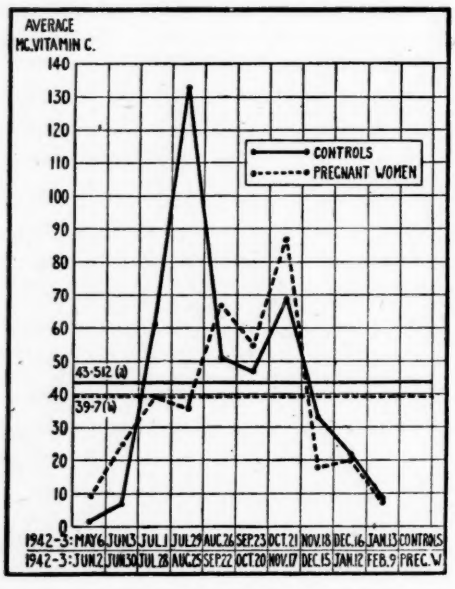
During wartime there have been various reports on the degree of saturation with vitamin C. Harris (1942), using the saturation tests described by Harris *et al.* (1935), investigated children in residential homes, elementary-school children, and university students. By comparison with results obtained under pre-war conditions he found that the average saturation curves for April, 1941, were lower than those for 1939. He also found a seasonal variation, the results being low after winter and better after summer. Francis and Wormall (1942) also investigated students. Their results after 9 months of war were not much different from those of a similar group 12 months earlier. After 21 months of war, however, a greater degree of unsaturation was found. More recently, Kohn, Milligan, and Wilkinson (1943) gave a preliminary communication on levels of vitamin A and C nutrition in school-children. They found that 72% of the control group were unsaturated, but that in the group which had received supplementary vitamins all were found to be saturated after three months' tests.

Present Investigation

It was considered that it might be of interest to examine a group of pregnant women with reference to their degree of saturation with vitamin C under wartime conditions. These women, though receiving certain extra rations—e.g., milk, and in some cases blackcurrant juice—have probably a greater drain on their resources owing to pregnancy. By collaboration with the doctor of an ante-natal clinic it was possible to choose the patients according to their degree of intelligence and power to co-operate. In all, 40 women were tested at monthly intervals on their visit to the clinic. They received a special form in which to record their diet for the week previous to the test, with special reference to fruit and vegetables. It was obviously impossible to control their diet or to take samples for vitamin C

content, but, in any case, the results on present-day ordinary meals were what was required. Five non-pregnant women were tested each month as controls. The saturation test employed was that described by Pemberton (1940). This test does not reach the same peak as that described by Harris *et al.* (1935). Pemberton, however, obtained comparative results on two groups of boys—one group on a basic diet and the other on a supplemented diet. He was able to show a marked difference between the two groups. Harris's method is definitely better as it covers a slightly longer period, since the last specimen is not passed till 3 or 4 p.m. Owing to transport difficulties it was impossible to arrange for the women to bring back specimens later in the day, hence the decision to use the shorter method. The first specimen of urine was passed at 9 to 9.15 a.m. (Specimen A); a test dose of vitamin C of 70 mg. per stone of body weight was then taken. Urine was again passed at 11.15 a.m., but was discarded; and again at 1 to 1.15 p.m. (Specimen B). This latter one represents the specimen after the test dose. Only a cup of water, as recommended by Pemberton, was allowed to be drunk after the test dose. The urine was collected in special bottles containing a known volume of glacial acetic acid. Vitamin C was estimated in Specimens A and B by the method of Harris and Ray (1935), the dye being standardized each time. The number of monthly investigations varied with the different cases, as some were evacuated before confinement; but an average of five were done on each woman, making over 200 in all. The whole range of the experiment extended from May, 1942, to Feb., 1943, when, owing to unavoidable circumstances, it was impossible to complete the full year.

The results are given in four tables and a graph. Table I depicts the average amount of ascorbic acid excreted by the five controls both before and after the test dose. It also shows the range for each period. Table II is similar to Table I, but relates to the 40 pregnant women. These results are plotted as a graph. Table III gives the average percentage excretion of ascorbic acid per patient for the first 28 weeks of pregnancy and for the remaining period.



Graph showing comparison between results in controls and those in pregnant women. (*a*) = Average excretion per test, control group. (*b*) = Average excretion per test, pregnant women.

TABLE I.—*Average Amount of Ascorbic Acid excreted by Controls*

Tests	Dates	Specimen A: Range before Test Dose (mg. per 100 c.cm.)	Specimen B: Range after Test Dose (mg. per 100 c.cm.)	Average before Test Dose	Average after Test Dose
5	6/5/42– 2/6/42	1 –0·8	0·8– 3·6	0·48	1·76
5	3/6/42– 30/6/42	0 –0·3	0·7– 20·8	0·10	6·56
5	1/7/42– 28/7/42	0·2–0·3	21·1– 91·8	0·22	61·0
5	29/7/42– 25/8/42	0 –6·2	77·3–266·7	1·48	133·3
5	26/8/42– 22/9/42	0 –0·5	6·1–135·0	0·22	51·8
5	23/9/42–20/10/42	0 –1·0	16·7– 91·5	0·32	47·2
5	21/10/42–17/11/42	0·3–1·5	18·1–157·0	0·88	69·9
5	18/11/42–15/12/42	0·4–0·8	1·8–115·0	0·58	33·1
5	16/12/42– 12/1/43	0·3–1·5	1·4– 89·1	0·96	22·2
3	13/1/43– 9/2/43	0 –0·3	0·4– 23·9	0·10	8·3

Average after test dose per whole period and whole group = 43·512 mg.

TABLE II.—*Average Amount of Ascorbic Acid excreted by 40 Pregnant Women*

Tests	Dates	Specimen A: Range before Test Dose (mg. per 100 c.cm.)	Specimen B: Range after Test Dose (mg. per 100 c.cm.)	Average before Test Dose	Average after Test Dose
10	6/5/42– 2/6/42	0 –0·7	0·3– 53·0	0·34	9·44
16	3/6/42– 30/6/42	0 –1·2	0 – 82·3	0·30	26·9
22	1/7/42– 28/7/42	0 –1·04	0·2–123·1	0·27	39·9
21	29/7/42– 25/8/42	0 –1·3	0 –222·2	0·36	36·0
21	26/8/42– 22/9/42	0 –2·1	0·5–214·0	0·81	67·0
14	23/9/42–20/10/42	0 –4·0	2 –204·6	0·85	55·2
18	21/10/42–17/11/42	0 –3·8	15 –345·6	1·30	86·5
14	18/11/42–15/12/42	0 –1·3	1·2– 86·3	0·57	18·0
13	16/12/42– 12/1/43	0·3–2·1	0·5–118·0	0·86	20·0
12	13/1/43– 9/2/43	0·1–4·7	0·3– 23·6	1·01	6·9

Average after test dose per whole period and whole group = 39·7 mg.

TABLE III

Average excretion after test dose during first 28 weeks ..	36·4 mg.
Average excretion after test dose from 29th week	32·3 mg.

TABLE IV

Case	Average Excretion of Ascorbic Acid after Test Dose	Symptoms	Remarks	Infant
1	27·6	Spongy gums	Worse during parturition	Weaned at 3 months because of infantile eczema. Doing well now
2	49·5	,, ,,	—	Did well
3	52·1	,, ,,	—	,, ,,
4	43·0	,, ,,	—	,, ,,
5	2·3	,, ,,	Twins (one died)	Other did well
6	21·5	,, ,,	—	Did well
7	36·9	Anaemia	B. coli pyelitis in puerperium; cleared up	,, ,,
8	25·0	,,	—	,, ,,
9	20·6	,,	—	,, ,,
10	6·2	,,	—	,, ,,
11	6·1	,,	—	,, ,,
12	21·5	,,	—	Haematemesis 14th day. Transfused; did well
13	18·7	,,	—	Did well
14	72·0	Slight anaemia	Corneal ulceration at 3 months	,, ,,
15	64·0	Spongy gums and anaemia	Manual removal of placenta	,, ,,
16	19·9	,, ,,	—	,, ,,
17	8·5	,, ,,	Threatened miscarriage 18th week; settled down	,, ,,

Health of Subjects

With regard to the controls, their health with one exception was good throughout save for the usual colds. There was no evidence of anaemia or bleeding gums. The one exception may be worth mentioning as she lived with another of the controls, and therefore had practically the same diet. From May, 1942, to October their results rose together; but from November to January one of them fell considerably below the other, although still receiving the same diet, and in January she developed influenza followed by bronchitis, and was off work for five weeks. The clinical history of the pregnant women was fully investigated by the clinic doctor. Of the 40 women examined, 3 suffered from both spongy gums and anaemia, 6 others from spongy gums alone, and 8 from anaemia alone. Apart from these symptoms, only the complications associated with pregnancy developed, such as toxaemia and pyelitis, and even these in only a small proportion. This incidence of anaemia—27.5%—is considered by the clinic doctor to be definitely more marked than in pre-war days. With regard to the number of cases of spongy gums, both the clinic doctor and the ante-natal dentist to whom the patients

were sent are of the opinion that the incidence is definitely increased as compared with pre-war days.

The average results on the above 17 pregnant women showing symptoms are recorded in Table IV.

Discussion of Results

Three main points are shown up by the results. In the first place there is a wide variation in the degree of saturation as judged by the amount of ascorbic acid excreted after the test dose. To economize in space, tables showing each individual excretion are not given, but the variation in the control group lies between 0.4 and 266.7 mg., and in the pregnancy cases between 0 and 345.6 mg. Pemberton (1940) also found variations in his children—namely, 0.5 to 2.6 in those on a basic diet and 13.1 to 74.0 in those on a supplemented diet. One would expect wider variations in our cases, as there was no definite basic diet. Variations occurred from month to month, but where there was a marked rise this appeared to depend on the diet and, incidentally, the season of the year. This leads to the second point—namely, the seasonal variation in both groups. This is well illustrated in the graph. No precise figure for the exact level for saturation following the test dose has been found because, as Harris *et al.* (1935) state, "the test dose does not set out to measure an 'all or nothing' effect—rather, it measures a degree of response or saturation." The average amount excreted per test was worked out for the whole period of the experiment. That for the controls was 43.5 mg., as against 39.7 mg. for the experimental group. Neither of these figures represents a high degree of saturation, and thus it can be assumed that anything below is definitely on the low side. Taking this as our basis, we find in the graph that the real rise towards saturation begins near the end of June for the controls, and near the beginning of August for the pregnancy cases. This rise remains above the average level till November for both groups. The third point of significance is the height of the peak in the two groups. The controls show a much higher peak of 133 mg., as opposed to 86 mg. for the pregnant women.

Most of the investigations on vitamin C in pregnancy have been carried out by workers abroad. The majority show that there is a deficiency in this condition, though Imaz and Gascon (1941) state that, while some change occurred as pregnancy progressed, the limits were found to correspond to normal cases. They conclude that, given an adequate diet, there is no deficiency of vitamin C during pregnancy. Neuweiler in 1935, using the saturation test, found the following range: 8–125 mg. for non-pregnant women, 2–54 mg. during pregnancy, and 2–28 mg. during lactation. He concludes that the utilization of vitamin C is greater in pregnant than in non-pregnant women, and still greater during lactation. Gaehtgens and Werner (1937) found a deficiency which was rather more marked in multiparae than in primiparae. Investigating the serum ascorbic acid, Elmby and Christensen (1938) found it was diminished during pregnancy. They also concluded from their investigations that the winter diet from October to April was insufficient as the source of vitamin C—a fact which has been confirmed by our findings. De Rezende (1939–40) and Portnoy and Wilkinson (1938), using Rotter's test, found that the tissues of pregnant women were deficient in vitamin C and that this deficiency increased as pregnancy progressed. We have worked out the average excretion per person for the first 28 weeks of pregnancy and the remaining period (Table IV). There is only a small difference between the two, but it suggests a slightly lower saturation in the latter part. The finding that the excretion is lower in pregnant women than in controls thus confirms previous observations. That the latter show an earlier rise is also probably due to this fact, since any diminution during pregnancy would tend to lower not only the peak but the time at which the peak is reached. The explanation for this decrease in saturation was well defined by Teel *et al.* (1938), who, finding that the vitamin in the cord plasma was greater than that in maternal blood, deduced that the foetus acts parasitically on the mother.

Our results appear to indicate that, though at the present time the degree of saturation of both groups is low, there are certain periods during the summer months when it rises and the diet would seem to be more adequate. The increased incidence of anaemia as suggested by the clinic doctor may not be due to lack of vitamin C only but to other factors. With regard to the spongy gums, it would appear from clinical evidence that more cases are occurring than in pre-war days. The results of our experiments, however, show no definite indication that they are associated with lack of vitamin C. This may play a minor part, but no conclusion can be arrived at from the small number of clinical cases reported by the ante-natal doctor.

Summary

A group of 40 pregnant women were examined in respect of their degree of saturation with vitamin C under wartime conditions.

Results showed that there is a wide variation in the degree of saturation, and that it is on the low side.

There is a marked seasonal variation, the patients becoming definitely more saturated from June to October.

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SUDDEN DEATH IN LABOUR

BY

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The following is an account of sudden death occurring during normal labour in an apparently healthy young primipara, in whom a congenitally small aorta and a persistent thymus gland were found to be present post mortem.

Case History

Mrs. A. B., aged 22; primipara; well-developed muscular woman. No history of any illness. Had attended ante-natal clinic regularly and appeared to be a normal case. On June 2, 1943, at 9.30 p.m., pains started, and at 11.45 p.m. she was admitted to hospital. Term. R.O.A. Blood pressure 136/90. No albumin in urine. General condition good. Strong pains every 15 minutes. Foetal heart normal.

June 3, 1943.—1.30 a.m.: Three fingers dilated; membranes intact. 2 a.m.: Half an ounce of routine sedative mixture given; general condition good; foetal heart normal. 3 a.m.: Membranes ruptured; fully dilated. 3.5 a.m.: Patient became unconscious, cyanosed; breathing stertorous, limbs flaccid; strong pains every one or two minutes. 3.20 a.m.: Pulse rapid and weak; not so deeply unconscious; reflexes present; arms rigid; legs flaccid; diffuse macular rash on trunk and limbs. 3.25 a.m.: Child born—stillborn. 3.40 a.m.: Placenta expelled; normal loss; ergometrine 1 c.cm.; condition of patient poor but uterus well contracted; warmth; intravenous plasma; oxygen. 4 a.m.: Patient recovered slightly; semi-conscious, muttering, and restless. 4.30 a.m.: Patient deeply unconscious again; pulse weak and thready; condition very poor. 5 a.m.: Condition becoming hopeless; acutely restless; pupils dilated and fixed. 5.45 a.m.: Death.

Post-mortem Report.—Heart normal size. Right side relatively empty; this was opened *in situ* and found to contain about six air bubbles, but the blood was not frothy and no bubbles were in the pulmonary artery. Multiple subendocardial haemorrhages in the left ventricle. Valves normal. The aorta was notably small in diameter, measuring only 34 mm. in circumference. Other blood vessels normal. The thymus persisted. Upper air passages clear. The pleura and lungs were perfectly normal, with no trace of pulmonary oedema. The thyroid was slightly enlarged and showed some nodules. Lymph glands not appreciably enlarged. There was ascites of 2 to 3 pints; the fluid was straw-coloured and slightly blood-stained; the peritoneum was otherwise normal. The stomach and

bowels were normal except for the distension of the latter with gas. The liver was of normal size, but notably pale. Gall-bladder was normal, and filled with very pale bile. The spleen was twice the normal size, and was red and soft. The suprarenals and pancreas appeared normal. Kidneys normal except for some dilatation of the right pelvis and ureter. Bladder normal. Uterus recently delivered; placenta had been attached at fundus posteriorly; well contracted, normal, no tears of cervix. Bruising of vagina. Tubes and ovaries normal. Skull, meninges, and brain all normal; no cerebral oedema, etc.

Section Reports.—The thyroid shows patchy epithelial hyperplasia and increase in stroma, but no appreciable lymphocytic infiltration. The thymus (see Fig.) has typical Hassall's corpuscles. There is

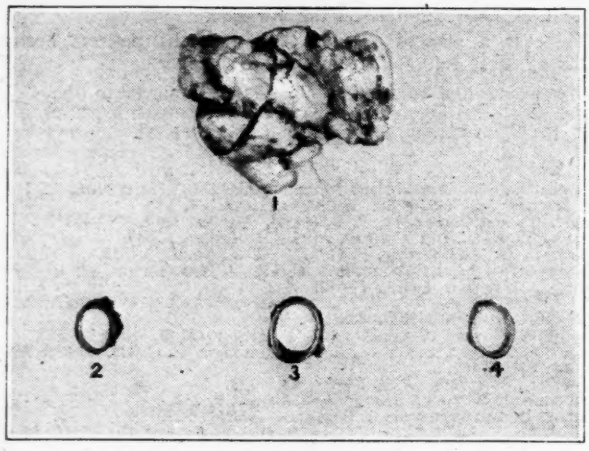

Illustration showing (1) the persistent thymus gland; (2) small aorta from patient (circumference 34 mm.), with, for comparison, (3) normal aorta from adult (circumference 51 mm.) and (4) normal aorta from boy aged 12 (circumference 41 mm.).

hypertrophy of the pituitary, with many basophilic cells. The heart muscle appears normal. The liver shows an extensive tendency to necrosis in the central and intermediate zones, but this is in an early stage. The kidney shows some swelling and early necrosis of the convoluted tubules, and a fairly extensive deposition of brownish pigment in the collecting tubules especially. The pigment does not give an iron reaction. The uterus shows hypertrophy of pregnancy and some decidua; no inflammatory changes.

Death was apparently due to shock. The persistent thymus, small aorta, and nodular goitre evidently gave her a morbid predisposition to shock. The shock was apparently the result of a very rapid birth—the whole labour taking only about six hours instead of the usual 18 to 24 hours in a primipara. The aorta was very small, the circumference being only 34 mm. (see Fig.). The normal circumference for an adult female is about 51 mm., and the normal circumference for a boy aged 12 is about 40 mm. The circumference was measured at the level of the sixth thoracic vertebra.

The patient had had a sister who had died suddenly at the age of 9 while playing. There was no injury. It was on the occasion of a special Sunday-school event, and she was excited. Necropsy and inquest: death due to status lymphaticus.

Discussion

The association of a small aorta with a persistent thymus is evidently a matter of importance. Millar and Ross (1942) measured the aorta in many cases of death from accident and disease: the circumference was smaller in those dying from accident, though not grossly so. They consider that a narrow aorta is evidently able to provide for the ordinary needs of the body, but may be unable to cope with sudden emergencies, and may lead to accidental death. In considering the syndrome of status lymphaticus—persistent thymus, enlarged lymphoid tissue, poor development of the arterial system, especially in aorta calibre—they are of the opinion that developmental arterial hypoplasia is the most reliable guide. Moon (1942) says: "A small percentage of human beings have a group of associated anatomical features—hyperplasia of lymphoid tissue, hypoplasia of heart and arteries, etc. A few individuals are liable to die unexpectedly from trivial and inadequate causes: such cases occur almost exclusively among the anatomical group described." Temple Grey (1937), in discussing causes of sudden death, mentions cases occurring in energetic young adults in whom the heart and aorta are small for the size of the body and in whom some thymus tissue usually persists.

German authors Kehrer and Romberg (1936) think a persistent thymus may precipitate death in obstetrical complications, and quote cases of placenta praevia, renal lesions, haemorrhage, anaemia, and version. Kehrer quotes a case in which sudden death occurred during a version, and the patient was found to have pronounced status lymphaticus with a greatly narrowed aorta. Romberg considers that the process of labour alone may be responsible for sudden death in such a patient.

A further case also occurred at this hospital about a week after the one described above. A 3-para aged 22—an unbooked maternity case—was sent in with a severe post-partum haemorrhage. She was dead on arrival, and at the necropsy a persistent thymus and a small aorta were present.

Summary

A case is described in which sudden death occurred in labour in an apparently healthy woman.

At necropsy a very small aorta was found to be present along with other signs of status lymphaticus.

A similar case in normal labour is not traceable in the literature on an ordinary search, although the condition does not appear to be unduly rare.

The small aorta will render the patient more liable to peripheral circulatory failure, especially if some shock-producing condition is present—e.g., rapid labour.

It is suggested that this condition may be a contributory factor in uninvestigated deaths occurring during abnormal labour and may also be responsible for some of the unexplained deaths in normal labour which are not fully investigated.

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Medical Memoranda

Amoebic Abscess of Spleen

Amoebic abscess of the spleen is very rare, and when it does occur is usually associated with amoebic hepatitis. In this case there was no clinical evidence of liver involvement.

CASE RECORD

On April 1, 1943, an Indian girl aged 12 was brought for examination. She gave a history of pain in the left lumbar region of 30 days' duration and swelling in the same region for 21 days. She had no urinary symptoms and passed a normal stool once each day. She had been under observation elsewhere for 15 days, and during this time had had a temperature ranging between 99° and 104° F. Her pulse rate had varied between 90 and 110. Quinine and sulphanilamide had both been given without effect.

The child had obviously lost weight. Her pulse was 110 and temperature 103° F. The heart and the respiratory system showed no abnormality. On abdominal examination her spleen was found to extend downwards and forwards to below the level of the umbilicus, and was extremely tender. The liver was neither enlarged nor tender. The haemoglobin percentage was 60, the red blood count 3,400,000, and the white blood count 13,400—neutrophil polymorphs 80%, lymphocytes 18%, and large mononuclears 2%. The urine showed no abnormality. A provisional diagnosis of amoebic splenitis was made, and a course of emetine, gr. 1/2 daily for 10 days, was begun.

On the following day, April 2, cysts of *Entamoeba histolytica* were found in her stools. On April 5 her temperature reached 103° F. and a fluctuating swelling had developed below the left costal margin over the spleen. From this, 40 c.cm. of pus was aspirated. The pus was similar to that from an amoebic abscess of the liver, was sterile on culture, and no organisms were found in smears. No *E. histolytica* were seen in it. After this aspiration her temperature never rose above 98.8° F. On April 9, 10 c.cm. of typical amoebic pus was aspirated. On May 5 the patient was free from pain, her spleen was not palpable, and she had no disability.

J. R. FRANK, F.R.C.S.Ed.,
Capt., R.A.M.C.

Reviews

FRACTURES AND JOINT INJURIES

Fractures and Joint Injuries. By R. Watson-Jones, M.Ch.Orth., F.R.C.S. Volume II. third edition. (Pp. 550; illustrated. 75s. per set of 2 volumes, plus 1s. postage.) Edinburgh: E. and S. Livingstone. 1943.

The third edition of this work has of necessity been divided into two volumes, of which the first dealt with the general principles of treatment while the present volume deals with the various fractures and injuries in detail. The high standard of the first volume is fully maintained and the second is of even greater interest than its predecessor. It establishes a new standard in precise description and apt illustration, both of the injuries and of the methods by which they can be corrected. Scarcely a statement is made without an apt illustration, either photographic or diagrammatic, to clarify its meaning. The subject is, in fact, treated in such detail that the book is exceedingly difficult to review, and we can only recommend those who are interested in fractures to read it for themselves. As an example we might refer to the first chapter on injuries to the shoulder and to the short section on rupture of the supraspinatus tendon. Nothing could be more effective than the description of its causation, the diagrams of the lesion itself, and the precise description of the author's own technique for its relief. Injuries around the elbow, which are so common and so often the source of trouble to the surgeon, are discussed with equal lucidity, and our only fear is that the young surgeon may scarcely appreciate the immense difficulties which would seem to be so easily resolved. But perhaps the high light of the book is in the treatment of fractures of the neck of the femur by the modern nailing operation, where the method is described so precisely that it would seem difficult to make any mistake.

The whole book is profusely illustrated, often with great ingenuity, and we would again express our appreciation of the flaps which conceal key diagrams until the reader has been deceived by an apparently perfect *x*-ray photograph. The author deserves congratulation on a brilliant achievement in a work of use not only to the expert but to all who may ever have to treat a fracture.

THE TANGLE OF OCCUPIED EUROPE

Occupied Europe. German Exploitation and its Post-War Consequences. (Pp. 75. 1s. 6d.) London: Royal Institute of International Affairs, Chatham House, St. James's Square, London, S.W.1.

This booklet describes Germany's mobilization and exploitation of the resources of occupied Europe up to the autumn of 1943, and some of the problems to be faced during and after liberation. Within the occupied and satellite countries independent economic life has ceased to exist; all has been harnessed to the German war machine. The methods adopted and the results achieved in this nefarious undertaking in the various occupied countries are succinctly outlined. This enables the reader to gain some insight into the immensity and complexity of the problems that will face the United Nations when the overthrow of Germany has been secured. Should the release of occupied countries be gradual in the wake of advancing Allied armies the devastation of battle-grounds added to present scarcity will enhance the difficulties and urgency of relief. Should there be a simultaneous release of all occupied territory following a German collapse, the need for widespread relief and rehabilitation will present formidably complicated problems. The movement of millions of persons—war refugees, foreign workers who have been conscripted for slave labour in Germany, and prisoners of war—all anxious to return home at the earliest moment, will have to be controlled. Such control is important not least from the public health point of view. The organization and co-ordination of health services will be an urgent necessity.

A section of the booklet describes the setting up of U.N.R.R.A., its organization and functions. The task of unravelling the tangle of occupied Europe promises to be one of the most stupendous tasks to which mankind has ever set its hand.

CONSERVATIVE TREATMENT OF PYORRHOEA

Textbook of Periodontia (Oral Medicine). By Samuel Charles Miller, D.D.S., F.A.C.D. Second edition. (Pp. 733; illustrated. 50s.) London: Henry Kimpton. 1943.

This is an American book about the conservative treatment of pyorrhoea. That this aspect of dentistry is considered to be of the greatest importance at the New York University College of Dentistry is shown by the fact that the textbook is written by an associate professor of periodontia with the co-operation of four assistant professors, seven instructors, and fifteen special contributors, and that it runs into over 700 pages. The contributors presume that almost any case of pyorrhoea is suitable for treatment even when the teeth are loose. That they have evolved a most elaborate technique and are full of enthusiasm for the results they have obtained is beyond question: they are indeed fortunate in having so many persevering and conscientious patients. The operation of gingivectomy, which is the basis of the conservative treatment of pyorrhoea, is performed all over the world with varying degrees of success. The details of this procedure are well described and must stimulate British dental surgeons to careful consideration of their own techniques. The cure depends so much on the post-operative routine of dental hygiene that many of the disappointing cases seen in this country are the result of the patient himself not appreciating the part that he has to play to obtain a lasting result. The American does seem to understand this better than we do, and the chapters on this subject are helpful. Much is said about the medical aspect of pyorrhoea from the aetiological point of view and as a basis of treatment, but too little stress is laid on the importance of the mouth as a focus of infection. Periodontal disease can be the cause of much ill-health and serious illness, and conservative treatment of it is no guarantee that the infection has been eliminated.

Notes on Books

Sir IAN FRASER, M.P., has added another to his great services on behalf of his fellow-blinded by compiling a pamphlet published for the British Council (Sir Isaac Pitman and Sons, Ltd.; 1s.) entitled *Learning to be Blind.* Briefly it describes the experience of three great institutions—St. Dunstan's, the National Institute for the Blind, and the National Library for the Blind. In a series of cheerful pictures it illustrates the many callings open to blind men and women, the sports and games they can enjoy, and the approximation to normal social life which they can achieve. The approximation is so close that in many of the pictures the photographer has evidently had difficulty in indicating that the people shown are blind at all. It is mentioned that at the present time nearly 250 blind masseuses and masseurs are actively engaged in their profession. One drawback was that they could not administer electrotherapy because of their inability to read the instrument showing the passing of the current; but a simple clamping device has now made it possible for the blind operator to feel the needle of the instrument without damaging it, and now all blind masseurs and masseuses are trained to undertake electrotherapeutic work under medical supervision.

The South Travancore Medical Mission (London Missionary Society), situated in the extreme "toe" of India, has had 19 medical missionaries since its work began just over a hundred years ago, six of them Fellows of the Royal College of Surgeons of Edinburgh and nine others Edinburgh graduates. None of them shows as long a record of service as the present chief of the medical staff, Mr. T. HOWARD SOMERVELL, F.R.C.S., who joined the Neyyoor Hospital over twenty years ago. In the report of the Mission, carrying the story to May of last year, Mr. Somervell writes about his long experience. He has pursued the policy of cutting down the numbers of dispensaries and small branch hospitals and of concentrating on institutions larger and well equipped and situated in places of convenient access. Although the Mission now has only half the number of branches that it had in 1923 it has three times the number of hospital beds, and the chief hospital at Neyyoor has every facility for modern treatment except deep *x*-ray therapy. The report also contains the first impressions of the newest recruit, Dr. N. E. James, who writes that the advanced state of some of the diseases in India has to be seen to be believed. The first case of cholera he ever saw reminded him of "an air-raid casualty without any wounds."

The *Presse Médicale* of Paris recently celebrated the 50th anniversary of its foundation on Dec. 23, 1843.

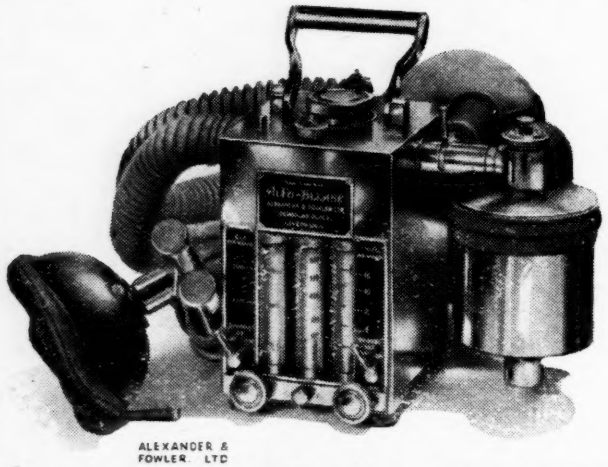
Preparations and Appliances

AN ALL-PURPOSE ANAESTHETIC MACHINE

Dr. ERNEST I. BIEBER, honorary anaesthetist, Chester Royal Infirmary, writes:

It has always been difficult to obtain an all-purpose anaesthetic apparatus that is both efficient and extremely portable. Alexander and Fowler, Ltd., of Liverpool have produced an apparatus which fulfils most excellently all the requirements of modern anaesthesia. The illustration shows the head only, but the complete outfits comprise both portable and theatre stands.

It consists of a rectangular metal box, 6½ in. deep × 5 in. × 4½in. Three small rotameters are contained in a recess in the



front of the box; they are calibrated for oxygen, cyclopropane, and nitrous oxide. Fine-adjustment valves which operate them are mounted on a panel directly below. Two small levers on either side of this panel control by-passes and provide a means of increasing the flow of O_2 and N_2O. A push-button on top of the machine enables full oxygen to be given in an emergency without the necessity for altering the fine-adjustment valves. The ether control valve and a three-way tap are placed on top of the box; this tap enables the gases as they issue from the rotameters to be passed either direct to the facepiece, over the surface, or actually bubble through the ether.

The ether container can be replenished or emptied by means of a filler placed behind the ether control valve, while an aperture at the back of the box enables the level of the ether to be readily seen. A tapered mount to which is fitted a soda-lime canister, an adjustable air port, and a half-gallon rebreathing bag fit directly to the right-hand side of the box. The canister, which is provided with a combined expiratory valve and an absorber by-pass, is fitted with perforated diaphragms to ensure even distribution of the exhalations through the soda lime.

The wide-bore rebreathing tubes, afferent and efferent, come from the left side of the machine and are adapted to an "E" piece which carries the mask. Inside this "E" piece are two non-return valves which control the direction of the respiratory tide. A third small-bore tube runs from the machine with the respiratory tubes; fresh gases are conducted directly to the mask by it. The design of the valves ensures a minimum obstruction to the respiratory tide, their position at the facepiece reducing dead space to the minimum, and ensuring more perfect absorption of CO_2.

If ether vapour is required, the control valve on top of the box enables any fraction of the warm exhaled gases coming from the absorber via the rebreathing bag to be passed over the evaporating surfaces placed in the ether container. The ether valve is constructed to allow vapour concentration to be increased so gradually that no interruption of the respiratory rhythm occurs.

During administration atmospheric air to any amount can be added to the circuit by means of a single ball bellows which can be plugged into the aperture on the right-hand side of the box. This air port may be used for the introduction of ethyl chloride into the circuit if required as an induction agent. At the end of the administration the combined contents of the bag and circuit can be voided through this port and the patient re-educated to breathe atmospheric air. A vinesthene drip feed may be plugged on between the machine head and the afferent tube if desired.

I have been using this apparatus for the past 18 months and have given every type of anaesthetic with it, from simple dental anaesthetics to intratracheal anaesthesia with controlled respiration, and have found it most satisfactory in use. The outstanding features in its design and construction are its portability, easy adaptability to various circuits, and simplicity in operation. In addition, it has the advantage that where there is a low-pressure supply of gas and oxygen, as on a theatre trolley, the machine head can be used directly from this.

APPARATUS FOR UTERO-TUBAL INSUFFLATION

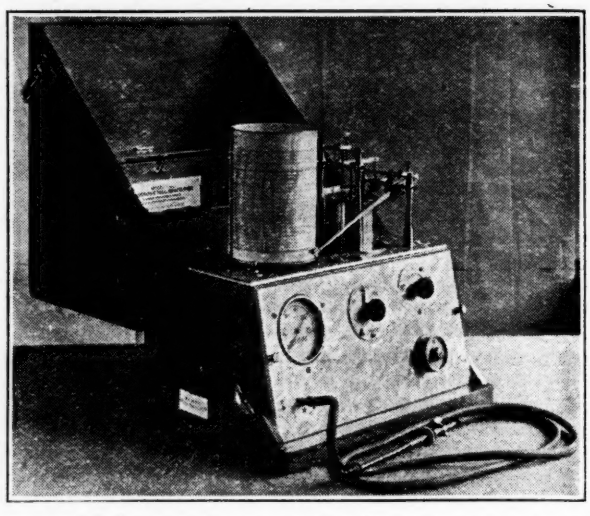
ALBERT SHARMAN, M.D., Ph.D., B.Sc., M.R.C.O.G., Royal Samaritan Hospital for Women, Glasgow, writes:

The use of utero-tubal insufflation with carbon dioxide for the determination of tubal patency or non-patency in cases of sterility—it is both diagnostic and therapeutic—is now universal. Many types of apparatus have been employed since the method was first described by Rubin in 1920. The addition of a kymograph in 1925 enabled Rubin to record the graph of the insufflation: the pattern gave definite evidence, not only of normal tubal patency, function, and non-patency, but also of tubal dysfunction and pathology—e.g., spasm and stenosis. All who have used the kymograph agree that it is a most valuable adjunct.

The apparatus described here is the most recent one manufactured, and it incorporates the main features first devised by Rubin, and subsequently modified by Bonnet.

Carbon dioxide is supplied by a cylinder, enclosed within a metal container. A spare cylinder is also enclosed, allowing for constant use of the instrument while the empty cylinder is being refilled. A reducing valve reduces the pressure of the gas to atmospheric (approximate) when the apparatus is in use. On the front panel of the instrument are mounted (1) the dial of the flow-valve, (2) a pressure gauge indicating the amount of gas in the cylinder and the point at which it requires recharging, (3) the main valve of the CO_2 cylinder, and (4) a close-and-shut valve. The rate of flow of the gas can be accurately regulated by moving an indicator on the dial of the flow-valve till it faces the figure corresponding to the desired rate (anything up to 100 c.cm. per minute).

Above the panel there is fitted a special type of recording manometer which records on a revolving drum, in ink, pressure variations during tubal insufflation. The drum, 9 cm. in diameter and 13 cm. in height, is provided with interchangeable sheets of chart paper; it is driven by a small synchronous motor (alternating current) at about one revolution in five minutes. The recorder charts are marked to read up to a pressure of 250 mm. of mercury, which is the maximum pressure recommended. The Rubin uterine cannula is used with the added Bonnet device for altering the level of the rubber nozzle, whereby the pressure of the latter against the extended cervical os may be increased as desired.



A compartment in the case (which is made of wood) houses the electric plug and flexible lead, the cannula, and its connecting rubber tubing. The chart papers also are enclosed alongside by means of clips. The case is fitted with a carrying handle and with clip-hinges for swinging the top cover back when the apparatus is to be used. The whole apparatus is compact and portable, the overall dimensions of the case being 13½ in. × 12¾ in. × 8¾ in., and the total weight approximately 22 lb. Each cylinder when full should supply enough CO_2 gas to do not fewer than 200 insufflations.

The apparatus is made by Kelvin, Bottomley, and Baird, Glasgow, S.W.

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FLUORINE AND DENTAL CARIES

"Caries has with justice been referred to as the most ruinous of dental maladies, not only in childhood but at every epoch of life. . . . I think it well worth consideration whether the reintroduction into our diet, and especially into the diet of child-bearing women and of children, of a supply of fluorine . . . might not do something to fortify the teeth of the next generation."[1] We are only now beginning to appreciate the truth of this suggestion, made by Sir James Crichton-Browne just over 50 years ago. Modern interest in the connexion between fluorine and the teeth dates from the early 1930's, when it was shown that too much fluorine in the food and drink led to a disfigurement or mottling of the teeth. At the same time, however, experimental evidence was accumulating to show that a certain amount of fluorine might be rather a good thing. Workers in America,[2 3] England,[4 5] and other countries noted that there was less than the average incidence of caries in communities in which mottled enamel was common. The drinking-water is probably our chief source of fluorine, and Dean and his colleagues[6 7 8] have made extensive studies indicating a relation between the amount of fluorine in the water, mottled teeth, and freedom from dental caries. They have shown that this freedom from caries applies to both the temporary and the permanent teeth, and it affects the anterior teeth more than the molars. Furthermore, in an area of endemic fluorosis the caries incidence in teeth that are mottled is the same as in those that are not, indicating that the reduction of caries is not the result of the mottling *per se* but rather of the intake of fluorine.

The optimum concentration of fluorine in the water is thought to be about 1 part per million. Below this level the caries incidence is high. Above 4 p.p.m. there is a danger of a severe degree of mottling with pitting. A very pretty comparison[9] has recently been made of the incidence of caries in North and South Shields. These towns, on opposite sides of the River Tyne, appear to be similar in climatic, social, and economic conditions, but the water supply of North Shields contains less than 0.25 p.p.m. of fluorine, while that of South Shields has a fluorine content of 1.4 p.p.m. The incidence of caries in the permanent teeth in 12-year-old children in North Shields was approximately double the incidence in South Shields.

Fluorine that is ingested while the tooth is being formed is incorporated into the tooth substance, but it seems an important point that fluorine can protect the teeth from caries even after they are fully calcified. Evidence for this has come from epidemiological studies[10] and from animal experiments,[11] and various attempts have been made to discover the mechanism at work. The enamel of caries-resistant teeth has been reported to contain increased amounts of fluorine.[12] The problem seems to be whether the fluorine reaches the hard tissues of the teeth via the blood stream and pulp, or whether the enamel itself combines with fluorine as it comes in contact with the saliva, the drinking-water, or the food. Rats have generally been used for these investigations. The caries is induced by feeding coarse particles of corn or rice, but rat caries so produced is not entirely analogous to human caries, for the lesions are mainly of the occlusal surfaces. In human caries it is usually the smooth surface of the enamel that is affected. However, dental caries in the rat remains the closest counterpart of human caries that can be brought about in experimental animals, and the caries-producing action of the coarse corn diet is undoubtedly lessened if the diet is supplemented with fluorine. Arnold and McClure[13] studied the effect of giving rats on a coarse corn diet sodium fluoride subcutaneously, and found no reduction in the incidence of caries. Sognnaes[14] tried the local application of potassium fluoride to the teeth of rats on a caries-producing diet, and found that the incidence of caries was half as high as it was in a control group not being treated with fluoride. It cannot be the presence of fluorides in the saliva that explains the effect, however, for rats from which the salivary glands had been removed showed the usual reduction in dental caries when fluorides were given by mouth.[15] Furthermore, very little fluorine is found in the saliva, even after the injection of relatively large amounts intravenously.[16] A preliminary note on the effect of the local application of a solution of sodium fluoride to children's teeth has recently been published.[17] It appeared to reduce the incidence of caries by 30 to 40%.

The conclusion that must be drawn from all this work is that in fully erupted teeth fluorine is adsorbed by the enamel directly from water while it is in the mouth. Evidence that fluorine has a special affinity for tooth substance is forthcoming from other sources. Fluorides have been shown to react with powdered enamel and dentine just as they do with other basic calcium phosphates, and the solubility of the tooth substance in acid is thereby decreased.[18] It appears from the evidence available that fluorine protects the teeth by combining with the enamel, thereby making it more resistant to the products of bacterial action in the mouth. A large-scale human experiment comparing the effect of using a water with 1 p.p.m. of fluorine and a dentifrice containing fluoride merits an extensive trial under well-controlled conditions. The effect of sucking tablets containing fluoride, as suggested by Broderick,[19] should possibly also be included in the

1 *Lancet*, 1892, **2**, 6.
2 McKay, F. S., *J. dent. Res.*, 1927, **8**, 353.
3 Black, G. V., *Dent. Cosmos*, 1916, **58**, 129.
4 Ainsworth, N. J., *Brit. dent. J.*, 1933, **55**, 233.
5 Murray, M. M., and Wilson, D. C., *Lancet*, 1942, **1**, 98.
6 *Publ. Hlth. Rep.*, Wash., 1941, **56**, 365.
7 Ibid., 1941, **56**, 761.
8 Ibid., 1942, **57**, 1155.
9 Weaver, R., *Brit. dent. J.*, 1944, **76**, 29.
10 Deatherage, C. F., *J. dent. Res.*, 1943, **22**, 173.
11 McClure, F. J., ibid., 1943, **22**, 37.
12 Armstrong, W. D., and Brekhus, P. J., ibid., 1938, **17**, 393.
13 *J. dent. Res.*, 1941, **20**, 457.
14 *Brit. dent. J.*, 1941, **70**, 433.
15 Cheyne, V. D., *Proc. Soc. exp. Biol.*, N.Y., 1940, **43**, 58.
16 Wills, J. H., *J. dent. Res.*, 1940, **19**, 585.
17 Bibby, B. G., ibid., 1943, **22**, 207.
18 Volker, J. F., *Proc. Soc. exp. Biol.*, N.Y., 1939, **42**, 725.
19 Dale, P., *Brit. dent. J.*, 1942, **72**, 251.

comparison. Prophylaxis in the future may lie, not in regulating the amount of fluorine in water supplies but in legislating for the compulsory inclusion of specified amounts of fluorine in every dentifrice that is sold.

IS SECURITY HARMFUL?

The fundamental problem for the welfare of any community is that of getting the best possible from its individual members. What is best is susceptible to a variety of definitions. Different communities have adopted different standards at various periods of their existence. Those who run a competitive individualistic society—or at least some of them—have no doubt of the way to get the best—in the sense of the most—out of an individual in the interests of one of the competing groups within that society. Their aim is to maintain a state of economic insecurity in the common man by preserving a surplus of labour and the correlative power to "sack." The efficient working of this doctrine depends fundamentally on fear—fear at different levels of individual social integration: fear of starvation, of inability to maintain the home, and of loss of prestige. Is this doctrine biologically sound—that human beings perform best when they are insecure in material ways or, indeed, in any other way? The author of the Beveridge report, for example, evidently thinks not. The question is a fundamental one for the reorganization of society as well as for determining the useful limit of schemes for social welfare.

The evidence from psychiatric experience on the whole supports the view that the creation and the maintenance of a situation of insecurity do not make for maximum efficiency. The doctrine in question is thought by many to be made scientifically respectable by evolutionary theory; but this view depends upon a misreading of Darwinism and its subsequent modifications. It is a hopeful sign that medical men are becoming more and more aware of their responsibility in guiding the thoughts of the community in matters that go to the very roots of the success of a society. Just as the individual as he matures has the need to develop a general point of view or a philosophy which will guide him in the major issues of life, so it is not less necessary for whole societies to have a systematic set of working principles deduced from the study of experience and undergoing a progressive evolution. Tradition after a time loses its force in a progressive society, which must continually try to abstract from its experience so as to profit by it more. It is here that sociologists, by their analysis of different patterns which have evolved spontaneously, can guide development in the directions most likely to be productive. Medical psychologists are especially in a position to do this because they see constantly the effect on human beings of blindly following traditional social convention and economic practice. The ancient Greeks, so eager to discuss the latest new thing in the market-place, would possibly find it difficult to understand our stress upon the value in our educational system of the study of the past.

It is a sign of the increasing awareness of the part that medical sociologists could play that the Royal Medico-Psychological Association has recently summarized the evidence in support of the Beveridge plan for unemployment insurance. The report of the R.M.P.A. stresses the deplorable effects of mass unemployment. As well as the purely financial consequences there is the psychological harm that comes from fear and depression, and the inferiority feelings that arise from loss of social prestige. Mannheim among others has emphasized the need for work in the maintenance of a man's self-respect. The possession of a job is far from being simply a question of monetary reward. Accordingly the R.M.P.A. recommends not only a subsistence allowance but machinery for the rapid reinstatement of the man or woman in industry somewhere else when local conditions make local employment impossible. Reinstatement should occur before apathy has time to set in. The R.M.P.A. adopts the view, which is the product of experience, that it is only insecurity—for example, in the shape of uncertainty of employment or inadequate benefit—that produces malingering. What is required is not safeguards against malingering but medical and psychological help for social failure resulting from intellectual, temperamental, or neurotic handicaps. It is to the interest of the community to provide, not as little but as much as it can, for all those who are willing to play their part in it. The war has shown that what matters, even more than death itself, is the severance of home ties and the break-up of family life; and it is especially the latter that any scheme of subsistence allowances and rehabilitation must provide against. How often one has heard from individuals coming from families who had been through bad times of prolonged unemployment that "the whole family just lost hope." In adults the inner discipline that results from good education is a far healthier safeguard against laziness than a permanent threat of external deprivation.

It seems that the answer to the question, "What is the best incentive?" does not lie in the negative, deterrent threat of the "sack" but in the positive incentive of a knowledge of security so long as one is willing to work; and very few people are unwilling. There is no more deplorable example of the narrow, merely financial, view than the failure to recognize that work means more than money which runs through the British system of Workmen's Compensation, where no attempt is made to provide for the reinstatement of the worker on a job except by forcing him by means of a meagre and diminishing allowance to return to his former job, if he can get it, or to cling to it long after he is medically unfit to do so. The sense of insecurity, the resentment, and the litigation that the present system induces, as well as the comparative futility of a lump-sum payment, are now increasingly recognized. It should be our responsibility to see that in any process of rehabilitation, vocational guidance and psychiatric social work are both brought into use. Psychopathic individuals should be rehabilitated in special centres of their own. The whole apparatus of the administration of sick benefit should be humanized, and Labour Exchanges so reformed that they lose their aspect of alms and sufferance associated with the bad old days of the dole. The whole trend of these recommendations made by the R.M.P.A. displays the realization that security is not

harmful; that the average human being will tend to rise to his opportunities, and that those who prefer to remain sick, like those who break down in war, are proper subjects for psychiatric examination.

MEDICAL ASPECTS OF PARACHUTE JUMPING

The U.S.S.R. first developed parachute jumping, both as a sport of civilians and as a valuable technique in offensive warfare. Even before the present war began they had made an exhaustive study of the medical aspects of the subject, the results of which were collected in a book by G. P. Greifer[1] in 1939. The Anglo-Soviet Medical Council has recently supplied an abstract of this, translated by H. Wareing. The whole approach to the subject is summed up by the observation that "parachute injuries, as has been proved by experience, are the result of carelessness in medical selection of parachutists, and inefficient training for and organization of parachute jumps." The major part of the work, therefore, deals directly or indirectly with selection, and it is interesting to find that, although physical examination is exhaustive and the list of rejecting disorders formidable, it is the psychological aspects of selection which have been studied most fully and found most profitable.

Repeated jumps at short intervals have been found to have a deteriorating effect, and even after single jumps there are changes in pulse rate, blood pressure, and urinary constituents, even including albuminuria and hyaline casts. Excluding the physical effects of structural disorder, such as hernias, incompletely united fractures, or an acute infection, the transient changes have all a psychological explanation, established by observation of jumpers, which is made on the ground, in the aircraft or on the training tower immediately before jumping, and on landing, time and time again. Their appearance and behaviour are noted and correlated with the physical changes which are found. All kinds of fear reactions are found in unsuitable pupils, including states of stupor or agitation. It is observed that persons with an unstable nervous system interrupt their training, are accident-prone, make foolish and catastrophic mistakes, and cannot deal efficiently with an emergency. Any evidence of functional or organic disorder of the nervous system is therefore a contraindication to jumping.

Trainees may be divided into four groups according to their behaviour in the plane before the jump. The first and largest (76%) are lively and excited, with rapid speech, flushed face, bright eyes, changing expressions, and general restlessness. The second (14%) are apprehensive—they look worried, preoccupied. and have pale faces, dilated pupils, and a dull expression. The third (3%) are depressed, indecisive, lethargic, and apt to be motion-sick, and the fourth (7%) are a mixture of the second and third. The first group jump confidently after one flight; the second need two or three, while the others will probably be failures. The selection appears to be based much more upon the man's reaction to his job than upon an initial assessment of his personality, and in this respect it is in line with the present tendency in the selection of air crews in this country and in the U.S.A. It is accompanied by a rigid medical examination similar to that used in the R.A.F., but it is followed by a vigilant follow-up throughout training. The man's successful progress is encouraged by a carefully controlled regime, which includes elaborate physical training and a course of education, the emphasis being again upon the psychological benefits rather than the purely physical. Accidents and injuries are all regarded as avoidable. Errors in jumping account for 5%, and 95% are due to mistakes in landing; but the selector and teacher are blamed—not the pupil. Of the landing accidents 65% result from failure to observe the rules, which prohibit landing on irregular or frozen ground, in a strong wind, and so on, while 25% are caused by bad landing technique, particularly in relation to leg position, the commonest injury being to the ankle or knee, though spinal injuries occur from indirect violence.

Some of the attention to the details of safety which is enjoined in this admirable book is impracticable in wartime, where the technique of parachute jumping differs for high and low altitude. Two papers have recently been published in Germany by Diringshofen[2] and Gauer[3] on the safety time limits which the jumper has at high altitude. The problem is to determine the correct procedure to prevent fatal effects from anoxia. The alternatives are to delay opening the parachute until the altitude is low enough to sustain life, risking the possibility of being insufficiently conscious to pull the cord, or to open the parachute immediately, risking death from prolonged anoxia. Resistance to anoxia is increased by hyperventilation on oxygen before jumping, and then holding the breath for as long as possible. The breath can be held for about a minute from 36,000 feet, which would enable the man to reach nearly 20,000 feet, at which height the parachute can be opened with safety. It is undoubtedly easier to discuss the ideal procedure than to put it into practice, but the Russian monograph makes it quite clear that actions enforced by rigid training will become automatic, turning a hazardous undertaking into a safe procedure.

[1] *Medical Aspects of Parachute Jumping*. People's Commissariat of Health, 1939. Translated from the Russian by H. Wareing.

TOXIC TANNIC ACID

One of the most remarkable changes in surgical fashion concerns the treatment of burns with tannic acid. Introduced in 1925 by Davidson, it soon gained widespread adoption and was at the outbreak of this war accepted as the orthodox treatment, for which was claimed not only a satisfactory local effect on the burn but also some degree of control of the general effects. Since the outbreak of war it has been almost universally condemned on both counts. It is now not only regarded as an unsatisfactory, and by some a dangerous, local dressing, but it is also held responsible, as a liver poison, for some of the toxic effects hitherto attributed to burns. While the former may still be a matter of opinion, the latter seems to have been clearly established both by experience in human burns and also by animal experiments. In 1938 Wilson and his colleagues[4] described lesions of the liver in fatal burns, and subsequently came to suspect that these were due to tannic acid. Recent observations of his have not been published, but they were taken up by Cameron and his colleagues,[5] who demonstrated the toxicity of tannic acid to animals and showed that the drug could be absorbed from burns. Further confirmation of Wilson's work was afforded by Barnes, Rossiter, and Clark.[6 7] From America, Wells, Humphrey, and Coll[8] reported four fatal cases of human burns treated with tannic acid in which central lobular necrosis was a conspicuous feature, and they produced similar lesions in small animals by injection of tannic acid. Further evidence from animal experiments is contained in two recent papers. Baker and Handler[9] caused liver necrosis in rats and mice

[2] *Luftfahrtmedizin*, 1942, **6**, 327.
[3] Ibid., 1942, **6**, 340.
[4] *Brit. J. Surg.*, 1938, **25**, 826.
[5] *Lancet*, 1943, **2**, 179.
[6] Ibid., 1943, **2**, 218.
[7] Ibid., 1943, **2**, 222.
[8] *New Engl. J. Med.*, 1942, **226**, 629.
[9] *Ann. Surg.* 1943, **118**, 417.

by injection of the drug and also by immersing the animals in a solution after denuding the belly of skin. Hartman and Romence,[10] working with dogs, found that some animals developed central necrosis with untreated burns, but that the incidence was increased by local application to the burn or by injection of tannic acid and also silver nitrate and ferric chloride.

While caution is necessary in applying to human beings the results of animal experiments on burns, it should be noted that suspicion first fell on tannic acid as a result of experience in human burns, and animal experiments have been used only to obtain confirmatory evidence. It may still be maintained by some that tannic acid is a life-saving measure, and that even if it is toxic its use is justified by a general lowering of mortality. But, although mortality from burns has diminished since tannic acid was introduced in 1925, there is no evidence that to-day tanning has any advantage in this respect over other methods.

ABSORPTION OF IRON

Preservation of the constancy of the internal *milieu* of the body usually depends either upon a balance between rate of production or absorption of a substance and its rate of usage or elimination (e.g., CO_2 tension of blood), or on the existence of a store which can be employed to even out lack of correspondence between rate of absorption and usage (e.g., glycogen). There are but few instances where level is regulated chiefly through control of the rate of absorption. But the recent work of Hahn and his co-workers[11] seems to suggest that the absorption of iron by the gastro-intestinal tract is regulated according to the size of the iron stores of the body. Despite a long-held belief to the contrary. McCance and Widdowson[12] have shown that elimination of iron from the body in the human subject occurs very slowly. A considerable excess of iron may harm those cells in which it is stored—e.g., liver and pancreas cells in haemochromatosis—and the body appears to be guarded against a too liberal intake of iron by the rate of gastro-intestinal absorption. Hahn and his colleagues have studied the uptake and shuttling of the elusive iron in the body in various conditions by following the course of the radio-active isotope after absorption. A known amount of radio-iron is introduced into the gastro-intestinal tract, and the amount circulating later in the red blood corpuscles is determined. In the experiments now reported they confirm their earlier findings[13] that the normal or the plethoric dog with ample reserve stores of iron absorbs very little radio-iron, but that the anaemic dog without stores will absorb 5 to 50%, varying with the amount administered, which promptly appears in new cells in the circulation. Since similar observations have been reported from the same laboratories for the human subject,[14] search has been made for the factors which control the absorption of iron. It has been shown that in dogs rendered acutely anaemic by haemorrhage absorption of radio-iron is within normal limits, but that after a week or a fortnight, when blood regeneration has begun and the iron stores have been depleted, the ability to absorb is increased and may be 5 to 15 times the normal. The means by which the iron reserves can affect the absorbing power of the gastro-intestinal mucosa is not clear; it is not through anoxia which may be consequent upon the anaemia. The giving of a dose of ordinary iron, however, 1 to 6 hours before the radio-iron in the anaemic iron-depleted dog causes a "mucosa block"—that is, the uptake of radio-iron is less than anticipated. On the other hand, iron administered intravenously does not appear to affect intestinal absorption. The conclusion is tentatively advanced that absorption of iron by the mucosa involves a loose combination of the iron with an acceptor before it is passed on to the plasma. It is suggested that a substance such as ferritin or apoferritin[15] may be responsible. The rate of transfer of iron from the alimentary tract may be governed by the plasma iron concentration. In the normal animal with a normal plasma iron the acceptor mechanism is regarded as physiologically saturated with iron and incapable of picking up more from the gastro-intestinal tract. When the iron reserves are depleted the plasma iron concentration falls and transfer across the gastro-intestinal mucosa is possible.

[10] *Ann. Surg.*, 1943, **118**, 402.
[11] *J. exp. Med.*, 1943, **78**, 169.
[12] *J. Physiol.*, 1938, **94**, 148.
[13] *J. exp. Med.*, 1939, **69**, 739.
[14] Ibid., 1942, **76**, 15.

ADULT MORTALITY

It has often been pointed out that the improvement in what is called the complete expectation of life during the last century is mainly due to decreases in rates of mortality over the first few years of life. We are, however, still inclined to think that one reason why statesmen of 150 years ago reached Cabinet rank at an age which now would hardly qualify them for minor office was because few survived to be Elder Statesmen. That is a mistake. The circumstances of the country in 1806 seemed almost as grave as those of 1940, and an all-party Government was formed. The Cabinet consisted of eleven members; the eldest was 57, the youngest 26, and the average age 49. The Cabinet Mr. Churchill formed in 1940 was a much larger body, but we can compare the eleven members of his Cabinet holding the same offices (substituting the Secretaries of State for Air and the Dominions for the Lord-Lieutenant of Ireland and the Lord Chief Justice) as the Cabinet Ministers of 1806. The eldest was 67, the youngest 43, the average age 55. Of Lord Grenville's Cabinet only one died under 60; of the remaining ten eight survived 70, and four of these survived 80 years. The English Life Table of 1930–2 would not predict as good results; however, Cabinet Ministers of the early nineteenth century did not come from the general population but from the landed gentry. Indeed only Lord Sidmouth, whose father was Chatham's physician, could be described as of the middle classes, and even of middle-class mortality our knowledge is incomplete. A recent paper by Sir William Elderton and Mr. Ogborn[16] throws some light on the changes in the rates of adult mortality in middle-class males over the last 150 years. In Sir William's own office, the Equitable, there has been a steady improvement even for so advanced an age as 62. Taking the rate for 1763–1829 as 100, that for 1863–93 is 80 and for 1924–8 55. As age advances, the difference between past and present decreases and has disappeared by the age of 82. What may be the "law" of mortality at very advanced ages is unknown. The comparatively scanty *exact* records of survivorship at ages beyond, say, 90 can be "fitted" by many different "laws," including one which postulates the longevity of Methuselah as not an impossible but only a very rare event. It does appear that sexagenarian juveniles have a greater expectation of survival than had their great-great-grandfathers.

Dr. Hugh S. Stannus will deliver the Lumleian Lectures before the Royal College of Physicians of London on Tuesday, April 18, and Thursday, April 20, at 4.30 p.m., at the College, Pall Mall East. His subject is "Some Problems in Riboflavin and Allied Deficiencies."

[15] *Science*, 1942, **95**, 439.
[16] *J. roy. statist. Soc.*, 1943, **106**, 1.

DISTRICT NURSING IN LONDON

The annual meeting of the Central Council for District Nursing in London was held on Feb. 24. In the report on the year's work it was mentioned that in some districts within the Metropolitan Police area the proposed new scales of salary for district nurses as recommended by the Rushcliffe Committee would not involve the local associations in much extra expenditure, but for the most part there would be considerably increased outlay, even though the Government would pay, through local authorities, 50% of the increase. It was the hope of the Central Council that the new standard would make it possible for trained nurses to contemplate a career in this vital and interesting work with the knowledge that pay would be reasonably adequate.

Another matter mentioned was that an increased number of applications have recently been received for "analgesic bursaries" which have been offered to enable nurses to receive instruction in the administration of gas-and-air, and the District Associations have found it necessary to make an effort, which was not possible in the more difficult years of the war, to release nurses for the period of the course.

The District Nursing Associations covered by the Central Council number 84, and during 1943 they received from various charities, funds, bequests, and subsidies a total sum of £13,072. The trustees of London Parochial Charities placed at the disposal of the Council £3,500 for distribution. The London County Council, in addition to its contribution of £7,461 for public assistance nursing, continued a grant of £200 for the nursing of the complications of midwifery. District nurses during the year made, under the L.C.C. arrangements, 132,800 visits to 5,478 patients for general nursing, and 103,600 visits to 1,412 diabetic cases for the purpose of insulin administration.

At the conclusion of the meeting of the Central Council Sir Stanley Woodwark, chairman of the Executive Committee, presided at a reception in honour of Sir William J. Collins, who has been chairman of the Central Council for over thirty years. Occasion was taken to mark the sense of respect and affection in which Sir William is held by those associated with nursing, and of admiration for his extraordinary record of service.

ECONOMY IN THE USE OF DRUGS

The Therapeutic Requirements Committee of the Medical Research Council has made the following amendments in the entries in War Memorandum No. 3:

Ascorbic Acid.—Reclassified B (essential for some purposes but not for others; to be used with strict economy); it should be prescribed only in the presence of medical indications for its use; not to be used as a supplement to normal diet.

Cod-liver Oil.—Reclassified A (essential or readily available).

Vitaminized Oil.—Reclassified B; this preparation is in short supply and should be used only when cod-liver oil is not tolerated.

Speaking at a conference held at the National Institute for the Deaf, in London, Mr. George Tomlinson, Parliamentary Secretary to the Ministry of Labour, appealed to voluntary organizations to co-operate with those responsible for the administration of the Disabled Persons (Employment) Act. Under the interim scheme, which had been in operation for the past two years, many disabled men had, he said, been trained and put on to work which would previously have been regarded as beyond their capacity. To-day 37 different jobs in one particular section of the engineering industry were being undertaken by blind workers. Deafness could be and often was a handicap in obtaining and retaining employment, and persons so handicapped came within the provisions of the Act. They would go to a vocational training centre to be taught a new job, and not only would they be paid while being trained, but those dependent upon them would be looked after. The expenses of training would be defrayed out of moneys provided by Parliament. After training the disabled person would be included in a register of all whose disability was a handicap in obtaining and retaining employment (there would be registration at all local labour exchanges) and an employer of more than 20 persons would be under an obligation to take a percentage or quota of disabled persons. Thus the deaf would be assured of work because the number on the register would determine the percentage required to fill the posts available. Mr. Tomlinson concluded by saying that it would be possible to form a nucleus round which to build the central advisory committee and the local advisory committees to be set up under the Act.

Reports of Societies

AETIOLOGY OF INFECTIOUS JAUNDICE

The Section of Experimental Medicine and Therapeutics of the Royal Society of Medicine organized a discussion on March 14 on the aetiology of infectious jaundice. Dr. R. D. LAWRENCE presided.

Animal and Human Transmission

Dr. F. O. MACCALLUM described recent work recorded in the literature on transmission of infective hepatitis in animals and human beings. The animal experiments were almost wholly negative, but it had been shown that blood in the pre-icteric stage and up to the second day of jaundice was infective for man. The experiments on animal transmission by Findlay, Murgatroyd, and himself yielded negative results on using whole blood, serum, nasal washes, faeces, and urine from pre-icteric and first-day jaundice, and inoculating by all possible routes hedgehogs, rabbits, guinea-pigs, and many other species of animals. Among experiments in human transmission, Cameron in Palestine had reported results indicating that there was an infective agent in the blood from the second day of jaundice, and Vogt, a German worker, had reported several positive results of inoculation into volunteers of duodenal juice, blood serum, and plasma in the pre-icteric stage. In the case of homologous serum jaundice, again, the animal results seemed invariably to be negative, but in man some positive results were recorded. Bauer and himself had taken the serum from seventh-day jaundice and inoculated five volunteers subcutaneously; two of them developed jaundice, and another a rise in bilirubin lasting for about a week.

Homologous Serum Jaundice

Dr. A. M. MCFARLAN gave a brief sketch of an outbreak of hepatitis after the use of mumps convalescent plasma which had been studied by the Red Cross and Harvard field hospital unit. Jaundice or at least a rise in bilirubin developed in a number of cases after the intravenous injection of the plasma. The picture of the condition in 47 cases admitted to hospital resembled that of infective hepatitis. There were no deaths, and recovery was in all cases complete. When the signs and symptoms were analysed and compared with the findings in 39 cases of ordinary infective hepatitis admitted to the same hospital over roughly the same period one or two striking differences appeared. They are best set out in the following table:

	Plasma hepatitis (47 cases)	Infective hepatitis (39 cases)
Vomiting	19 per cent.	62 per cent.
Arthralgia	25 ,,	8 ,,
Rash	42 ,,	13 ,,
Enlarged liver	79 ,,	41 ,,
Palpable spleen	38 ,,	26 ,,
Fever, 100° F.	15 ,,	16 ,,

Therefore there were some reasons for thinking that the disease differed a little from ordinary infective hepatitis. The laboratory studies included various examinations which excluded the possibility that it was an outbreak of virus disease. He thought it was clear that icteric batches of serum or plasma did turn up from time to time, but when cases were brought forward as plasma jaundice or homologous serum jaundice every effort should be made to discover, first, whether there were cases of infective hepatitis in contact, and, secondly, the source of the blood or blood products concerned. Without some idea of where the blood came from it was practically impossible to be sure in these cases. Until the aetiological agent was isolated from some of these homologous serum jaundices and from the infective hepatitis cases, or some specific serological test was developed, they would have to go on arguing whether the conditions were the same or different. All he had hoped to do was to furnish something to argue about.

Post-arsphenamine Jaundice

Major J. MARSHALL said that jaundice might occur at any time during the arsenical treatment of syphilis, but there were times when it tended to occur most frequently. There was a possibility of hepatitis within 6 to 15 days after the arsenical injection, and also of a delayed hepatitis about 100 days after

the start of treatment. It was possible for a patient to have both the early and the delayed hepatitis. The early hepatitis varied in severity right up to frank icterus, but it was usually quite mild and transient. The delayed jaundice occurring from the twelfth to the seventeenth week after the beginning of arsenical treatment was the commonest variety. It occurred in any type or stage of syphilis in the adult. Clinically this post-arsphenamine jaundice was indistinguishable from infective hepatitis; biochemically no significant difference between the two had been shown, and the liver changes were said to be the same in both diseases. Post-arsphenamine jaundice varied in severity from the mildest form to a fatal acute yellow atrophy. It was obvious that the arsenic itself had some part in the story, but it might not be the most important factor. The incidence tended to rise in times of economic stress. It varied enormously from clinic to clinic and from command to command. The incidence at the civilian and the R.A.F. clinics was much lower than at the Army clinics in the same area, though the methods used were not materially different. The incidence of jaundice among officers was at least as high as among other ranks, yet in peacetime the counterpart of the officer—namely, the private patient—practically never got this jaundice. The incidence in his own female clinics, civil and military, was well under 5%, yet Service women under his care were treated in exactly the same way as men. The only outstanding difference between post-arsphenamine jaundice and infective hepatitis was that the one had an incubation period of 100 days and the other of 30 days, and the former appeared to be spread by syringe infection. An attack of post-arsphenamine jaundice seemed to offer no immunity against infective hepatitis. The control of the condition was in the proper sterilization of syringes in clinics and in increasing the diet, particularly protein.

Major SALAMAN said that, being convinced that post-arsphenamine jaundice might be spread from patient to patient in clinics by means of syringes, he had inaugurated in his own clinic a scrupulous ritual with regard to syringes, with the result that there had been a significant drop in incidence. The fact that so many of these cases were now being noted was due partly to the shortage of syringes, which made the ordinary methods of using them more dangerous than formerly because they were not allowed to lie long enough in the disinfectant between injections, and partly to the fact that there might be an increase in the number of persons in the population who were healthy carriers or were in the prodromal stage.

Yellow Fever Vaccine Jaundice

Col. T. BADGER, U.S.A.M.C., said that epidemic hepatitis in the United States Army made its appearance in the spring and early summer of 1942. Northern Ireland was the centre of nearly all the cases appearing in the United Kingdom, but outbreaks were noticed wherever the troops were stationed. The aetiology was obscure. There appeared to be an association with yellow-fever vaccination, but it could be clearly stated that the jaundice was not yellow fever in any form. Convalescence was slow, but recovery was complete. The mortality was under 1 in 1,000. The number of weeks after yellow-fever inoculation when the jaundice appeared averaged sixteen. The jaundice-producing agent in yellow-fever vaccine was shown to be filterable; it survived drying at 4° C. over long periods, and survived heat at 56° C., and appeared to be neutralized by radiation.

In some further discussion Dr. MCLACHLAN mentioned the serum colloidal gold reaction in infective hepatitis and in arsenical jaundice respectively. In a series of 105 cases of infective hepatitis this reaction was positive in 95%, and in 50 cases of arsenical jaundice it was positive in 42%, appearing to indicate some essential difference in liver metabolism. Dr. LOUTIT gave grounds for suggesting that the transmission of arsphenamine jaundice was not purely a question of the transference of an infective hepatitis virus from case to case, but of an agent in human serum, whatever it might be, from one person to another. Sir HENRY TIDY recalled two recent developments in the study of jaundice. One of them arose about 1928–30, when catarrhal jaundice, as it was called, in old people attracted attention. The older the patient the longer the clinical course. The other arose about 1935 with the observation that jaundice was comparatively common in glandular fever, though he himself had for many years noticed an occasional association. This, however, was now so common that he saw in a recent description of glandular fever the setting apart of a definite subgroup, which it was said began with jaundice. He thought there was some tendency to look upon hepatitis, when it occurred, as a single entity, and to neglect lesions in other parts of the body—for example, the kidneys. There was the further question whether in all these cases the same factor was concerned and whether, if it was the same factor, it might be infectious on transmission by one route and not by another.

Correspondence

The Effects of Cold

SIR,—Will you allow me to comment upon the papers and correspondence on the cryopathies which have appeared in recent issues of the *Journal*?

In their paper (Feb. 12) Majors Goldstone and Corbett have contributed a most interesting new observation to our rapidly growing knowledge of the effects of cold. The appearance of hepatic and duodenal damage has not been reported before. I think, however, that the difficulty of clinical research on active service far from libraries has led them into certain errors.

It is not "surprising" that they should have observed immersion foot at temperatures above freezing-point. This phenomenon was noticed by Larrey in the Napoleonic wars and by many military surgeons since. I stressed this in a paper which they quote (*Lancet*, 1941, **2**, 689—not vol. **1**, as stated by them). The explanation is very simple. Water is a good conductor of heat, and if the feet are wet they lose heat rapidly at any environmental temperature below 98° F. If the loss of heat is sufficient to overcome the body's first adaptations, vasoconstriction and consequent ischaemia occur. On the other hand, dry air is a very poor conductor and extreme cold is needed to produce damage in such an environment. It was failure to understand this fact that led to the appalling casualty rate from trench foot and frost-bite in the last war (84,670 cases in the British Army alone). Most of the damage occurred at mild temperatures in France and Flanders.

The actual freezing to hardness of the skin has been overstressed. It is true, as Lake said in 1917 (*Lancet*, **2**, 557), that damage tends to be more severe if solidification occurs. I cannot, however, agree with Goldstone and Corbett (Feb. 12) or with Lake (Feb. 26) that it is the essential feature. On the one hand, severe damage, even gangrene, has often been observed (indeed, by Goldstone and Corbett themselves) at temperatures well above the freezing-point of skin. On the other hand, as I pointed out in another paper which they quote (*Lancet*, 1942, **2**, 695), solidification can take place without damage. I showed this in the feet of cats, the tails of mice, and (accidentally) my own fingers. Pathologically, there is no clear distinction between "true frost-bite" and "chilling" (Greene, *J. Path. Bact.*, 1943, **55**, 259). Clinically, the distinction is slightly greater, but it is only one between acute and subacute disorder. The concept of "mixed forms" is therefore unnecessary.

My friend Mr. Norman Lake remarks (Feb. 26) that "it has, of course, never been suggested that immersion foot bore any relationship to true frost-bite." On the contrary, I have often suggested it and am still unable to understand the grounds for differentiation. With the rest of Mr. Lake's letter I am in enthusiastic agreement.—I am, etc.,

RAYMOND GREENE.

"Immersion Foot" and Cold Therapy

SIR,—I am indebted to Mr. Norman Lake for drawing our attention to his very important conclusions of nearly 30 years ago. However, I am at a loss to understand why it appeared to him we implied that trench foot and frost-bite were probably synonymous terms. That there has been until comparatively

recently a certain tendency to confusion of these three conditions one with another also cannot be denied.

We were concerned in our article with presenting a conception of aetiology and of confirming to some extent the clinical picture portrayed in the very able article of Ungley and Blackwood. Our suggestion of mild active vasodilatation was based purely upon our conception of the nature of this condition, as opposed to pure frost-bite, and I well recall the relief of pain that resulted from the use of the cradle, particularly in the batch of ten that were observed. They were observed constantly over a period of two months, and gangrene certainly did not occur.

I may add that while I read Mr. Lake's second edition of his book *The Foot* with great interest and benefit, the third edition was unavoidably not available to us at the time of writing our article.—I am, etc.,

H. VINCENT CORBETT.

Pulmonary Emphysema

SIR,—Recently Christie, in his Goulstonian Lectures, has directed attention to the inadequacy of the pathology of this condition, and I suggest that this is due to the general neglect of the importance of the bronchial circulation. Since Christeller (1916), Lemoine (1936) has written a monograph on the importance of the thrombosis of the bronchial artery as the cause of chronic adult dilatation of the bronchi, although Brenner (1935), in his *Pathology of the Pulmonary Vessels*, alludes to the atonic dilatation of the bronchi in pulmonary emphysema.

At routine necropsy it is the commonplace for the bronchial vascular system to escape notice, as it is an early casualty in the evisceration of the thorax. For this reason it is not remarkable that this portion of the vascular system is not investigated, but it is regrettable that this system of analogous importance to the coronary system should be overlooked in pulmonary disease.

The extent of the bronchial vascular supply is not generally appreciated. In man it is not only the nutritive avenue of the bronchi and intrapulmonary tissues, but supplies the visceral pleura, oesophagus, pre-vertebral muscles, and occasionally the anterior portions of the vertebral bodies. Its intrapulmonary supply is also given to the pulmonary nerve trunks and to the vasa vasorum of the pulmonary vessels (Berry, 1935).

Now, in considering the factors in the development of emphysema, admitting the usual causes of chronic bronchitis and asthma, the first stage is the disruption of the integrity of the bronchial circulation. This is a major factor in the pulmonary blood flow, as it has been shown that the bronchial and pulmonary vascular systems are haemodynamically linked in a capillary bed which is partly common to both (Berry and Daly, 1931). This mainly affects those capillaries which are in contact with the alveoli. It follows that the impairment of the pulmonary tissue secondary to the loss of its proper nutritive channel—the bronchial supply—will permit extensive damage on the stress and strain of coughing on the weakened lungs. The term "hypertrophic" is a pathological misnomer when applied to pulmonary emphysema, as the bulk of the distended lung is due to loss of elasticity and is really "atrophic" when studied histologically.

If we consider the distribution of the bronchial circulation, it can be seen that any diminution in supply to the vasa vasorum of the pulmonary artery will give rise to the atherosclerosis of these vessels to which Christie makes reference. In those cases of emphysema which arise without pre-existing bronchitis or asthma a primary lesion of the bronchial vascular system is responsible (and overlooked). Conversely, the glass-blower or wind instrumentalist is in no danger of emphysema so long as his bronchial circulation is intact.

Clinically, I find the tape measure does not bear any true relation to the degree of dyspnoea. The signs I find of the greatest value are the hyperresonant percussion note and the encroachment of the emphysematous lung on the complementary pleural spaces.

I agree that pulmonary vascular congestion is the true cause of dyspnoea, as shown by its disappearance in those few cases where the pulmonary valve has become incompetent. This similarly happens in mitral stenosis occasionally.

Sufficient has been said for the appreciation of a bronchial vascular lesion as the primary factor in the production of emphysema, with strain or raised intrapulmonary pressure against a closed glottis as the secondary factor. In no way am I seeking to minimize Christie's points, but I would suggest that there is a lot to be said for reversion to the old technique of cadaveric vascular injection prior to investigation of pulmonary disease.—I am, etc.,

Burton-on-Trent. J. L. BERRY.

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Gold Treatment of Arthritis

SIR,—Your leader (March 4, p. 329) commenting on the work of Freyburg, Bloch, and Levy on the use of gold in arthritis is timely and interesting. Their work in 1941 drew attention to the fact that the usual dosage of gold was too high, producing a greater frequency of toxic reaction with no corresponding rise in therapeutic efficiency. This has been appreciated from clinical experience for some time by those interested in these matters, but gold treatment is also used by many practitioners with no great experience.

Freyburg *et al.* in their more recent work have added to knowledge, but still leave something to be said from the clinical angle. Their present view is that 50 mg. of myocrisin (or sanocrysin) weekly is the minimal dose which produces a therapeutic effect with any degree of certainty. This, however, is still high enough to cause toxic reactions (in their case, and under expert guidance, 17%). As a proposition stated in general terms let me hasten to say that this would meet with general approval. Unfortunately this hypothesis will be accepted by the doctor who only uses gold salts occasionally as the whole truth and nothing but the truth. As in so many cases, the real truth is a compromise and could be stated as follows.

There are many cases of infective (or rheumatoid) arthritis which are resistant to gold treatment at any dose less than 50 mg. weekly, but there are also many cases of arthritis which respond to gold treatment at a much lower dosage level. As an example: 400 cases of infective arthritis have been treated over the last 10 years with crystalline salts of gold. Of these about 25% have proved entirely resistant to gold in any dose, and little but disaster has followed increasing the dose over 50 mg. of the salt intramuscularly weekly. Of the remainder about 50% have been found to respond as well with 5 mg. weekly as with 50 mg. The remaining 50% have to be raised to the top dosage to achieve the desired result.

With this experience it can be said with some hope of approximating to the truth that, from the point of view of gold therapy, cases of infective arthritis can be divided into three groups: (*a*) Those entirely resistant to gold. (*b*) Those who only respond when the dosage is raised to the ceiling level of 50 mg. of a crystalline salt weekly. (*c*) Those who respond to gold in the very smallest doses (5 mg. weekly). One further deduction can probably be safely made. Those who respond most satisfactorily to the small doses are those with a low sedimentation rate. This is fortunate, as in my experience it is just these cases which react badly to the larger doses. Although a dose of 5 mg. is not put up by the commercial firms at present, so far as I know, it is quite a simple matter to take half a 10-mg. ampoule, which can always be obtained.

Following the use of this technique only one case of mild dermatitis has occurred in my practice in the latest five years. So far as I can tell, until the cases are statistically analysed the percentage of "symptom-free" patients remains fairly constant.—I am, etc.,

London, W.1. ERNEST FLETCHER.

The "Extra Pharmacopoeia"

SIR,—The *Extra Pharmacopoeia* and the *British Pharmaceutical Codex* have established their positions as works of reference so firmly that the attack on them in the review of Volume II of the *Extra Pharmacopoeia* which you published on March 18 cannot pass without a protest from the Pharmaceutical Society.

Your reviewer acknowledges the existence of Volume I. Nevertheless in his search for something to give spice to his criticism he appears to suggest that Volume II stands by itself. Had he studied its contents and compared them with those of Volume I he would have reminded himself that Volume I deals generally with new drugs and advances in medicine and Volume II with the numerous subjects ancillary to those dealt with in the first volume. This division does in fact avoid the "jumble of pharmacognostical information and analytical methods on the one hand with new drugs and advances in medicine on the other" of which he complains. Is it not the duty of a conscientious reviewer to study the contents of the book under review?

Your reviewer is wrong when he says that there is "a lack of connexion" between the Society's Pharmacological Laboratories and its publications: the staff of the laboratories contribute largely to the publications. He is wrong, too, when he complains that the books lack "the benefit of that kind of pharmacological advice which can only be given by those engaged in or trained in research." Leading pharmacologists have ungrudgingly given their help and served as members of revision committees. When he asks, Who is interested in the determination of rotenone in derris? is he not in fact saying, "I am not interested; therefore omit it"? What would his opinion be of the views of any for whom the book fell open at page 171, instead of page 163, and who might deplore the description of methods for the biological assay of digitalis? From his disregard of other sections of this volume of 1,217 pages, dealing with, for example, proprietary medicines, chemotherapy, biological analysis, vitamins, and electrotherapy, one might, perhaps unfairly, conclude that he had not considered it advisable to allow the book to open at any other page.

His determined disregard of Volume I provides him with the grounds upon which he complains of "strange omissions" in the field of new drugs. Let us consider the drugs he names: thiourea and thiouracil have been introduced in this country since the last edition of Volume I was published and will be discussed in the next edition. Pethidine was not known by this name when the last edition of Volume I was published; it was available only in the proprietary form of dolantal. (It was this proprietary form that was the subject of the paper in the *Quarterly Journal* which your reviewer mentions, a paper dealing solely with pharmacology, and not appearing until after Volume I had gone to press.) He has ignored the description of dolantal in Volume I and overlooked the publication of the recent Supplement to Volume I reviewed in your issue of March 11, in which pethidine is included as the name approved by the Medical Research Council for this substance.

A pedestrian review may make dull reading, but it often has the merit of contributing solid suggestions for improvement. Your reviewer might have had less fun, but he would have done better justice to his reputation and that of your esteemed journal had he approached his task with something of the care and pains that have gone into the production of this book over the last four years.—I am, etc.,

HUGH N. LINSTEAD,
Secretary, Pharmaceutical Society of Great Britain.

17, Bloomsbury Square, W.C.1.

How to Break off Alcohol

SIR,—Your issue of March 18 (p. 399) contains an annotation on the so-called conditioned reflex method of treating alcoholics. The underlying idea of associating various drinks with violent nausea originally was given a very elaborate setting or ritual by Voegtlin. This ritual subsequently has been modified, but the results obtained are, in my opinion, due to suggestion rather than to conditioning. The number of repetitions is far too small to establish a conditioned reflex, and, as with all forms of treatment for alcoholism, the good will of the patient himself remains essential.

Emetine and apomorphine, apart from their emetic effects, are drugs of long-standing reputation in the treatment of alcoholism and other addictions. Their drastic exhibition reinforced by powerful suggestion does not, in my experience, establish a conditioned reflex, though their administration in this way is so highly disagreeable as to make the risk of a repetition worth while avoiding.

So far so good, but there is a subtle danger in all such violent methods, even when, superficially, they appear successful. Alcoholism must be regarded as a symptom, and its suppression by so-called conditioned reflex methods while its cause remains untreated is a temptation which should be understood and scrupulously avoided. Unless the predisposition of the addict is recognized and treated, he, although possibly eschewing alcohol, will resort to some other method of side-stepping his difficulties. Many alcoholists, particularly doctors, who try to cure themselves thus become polynarcomaniacs.

Apart from recourse to other drugs there are many ways in which the psychologically untreated addict may show that merely "to break off alcohol" is to bring on something else—another and possibly a worse symptom. To warn the unwary against stumbling into this pitfall is my excuse for trespassing upon your valuable space.—I am, etc.,

A. E. CARVER.

Caldecote.

Effect of Pregnancy and Parturition on Pulmonary Tuberculosis

SIR,—In his interesting review of 100 cases (Dec. 18, 1943, p. 775) and subsequent letter (Feb. 5, p. 196) Dr. Cohen blends cautious comment with precipitate deductions, and in the interests of the tuberculous woman some warning must be given against the acceptance of his "conclusions" without fuller analysis. They were: (1) Pregnancy and labour *per se* rarely exert any harmful effect on the progress of a woman known to have suffered from pulmonary tuberculosis. (2) It follows that therapeutic abortion is not a procedure to be resorted to simply because a woman is known to have suffered from pulmonary tuberculosis. (3) Active pulmonary disease is seldom accelerated by pregnancy and labour, and I have found that in such cases, treated under favourable conditions, pregnancy has been little more than an incident in their tuberculous career.

It should be noted, therefore, that, by accident or design, the Essex arrangements (as described from 1937 onwards) adhere closely to one section of a more extensive scheme which was advocated at a special discussion on this subject during the B.M.A. Conference at Oxford in 1936, when "minimal harm" cases (now brought forward by Dr. Cohen) were already acknowledged, and when practical problems were investigated for giving a greater number of pregnant tuberculous women this degree of advantage over their previous possibilities. An overwhelming weight of evidence was produced at that conference to prove the ever-present dangers of pregnancy for the tuberculous woman, and hence the aim of the Oxford scheme was to counteract these dangers in every possible way by the fullest co-operation between obstetricians and tuberculosis workers. The good results in Essex indicate the value of such a scheme, but, nevertheless, a danger does not cease to exist merely because it is brought within a certain degree of control, and I feel strongly that it would be an unnecessary risk for the patient if we were now to accept the first and third "conclusions" of Dr. Cohen of Black Notley rather than the considered opinions given at Oxford in 1936 by, among others, Prof. Cohen of Liverpool.

Further, Dr. Cohen's deductions are not supported by the latest work elsewhere. It cannot be granted that the supervision and treatment of the tuberculous woman are in any way less in the London area than in Essex; in fact, this must be a material understatement of London's facilities! It may therefore be of interest to make it clear that, to many who have specialized in the care of tuberculous women in London during the last 20 years, the following facts stand out prominently:

(1) In numerous cases the "onset" of pulmonary tuberculosis can be ascribed definitely to the period of a pregnancy; hence pregnancy must retain its place as a prominent precipitating factor in the development of the disease.

(2) In no case can it be shown that a pregnancy has brought about any permanent benefit to the lungs of the tuberculous woman.

(3) A proportion of cases of inactive pulmonary tuberculosis manifest little, if any, harm from a single pregnancy, but this group mainly consists of cases where the disease has been arrested for at least two years, and, even in them, subsequent pregnancies are prejudicial.

(4) The large majority of "active" lung cases tend to deteriorate appreciably during the pregnancy or within a few weeks after labour,

while with bilateral disease the retrogression is out of proportion to the degree of earlier involvement.

(5) To achieve the minimum of ill effect it is essential that combined obstetrical and tuberculosis treatment (preferably under sanatorium conditions) be provided for the tuberculous woman as soon as the pregnancy is detected, that the confinement should be made as "easy" for her as possible, and that intensive tuberculosis treatment should be continued for several months following labour.

(6) While therapeutic abortion is not undertaken as a "routine," in certain cases it is essential for safeguarding the patient's life; but from the tuberculosis standpoint, it can on no account be attempted, without still greater risk to the woman, after the sixteenth week.

It is not within the scope of this letter to amplify the individual points (which are not incompatible with the Essex results) nor to discuss special measures adopted for improving the outlook for both woman and child. But these findings definitely preclude the acceptance of Dr. Cohen's first and third conclusions, while somewhat elaborating his second.—I am, etc.,

Grove Park Hospital, S.E.12. M. H. LOGG, M.D.

Shock Treatment of Mental Disorder

SIR,—The true reason for the controversy about shock therapy in mental disorders (Dec. 25, p. 829, and Jan. 8, p. 60) seems to be that this new therapeutic approach undermines certain basic psychiatric concepts. Personal experience with electric shock therapy in almost 2,000 patients in two New York hospitals suggests an answer to some of the questions brought up in the correspondence. Comparison of results in acute psychotics in an institution and in a second series of voluntary patients offered valuable information on the question shock therapy and/or psychological treatment.

Shock therapy is mainly indicated and is self-sufficient in acute psychoses. In my institutional material no psychotherapy of any kind during or after electric shock therapy was applied; the results were surprisingly good. On the other hand, the patients of the non-institutional group, consisting of borderline cases between neurosis and psychosis, were usually subjected to psychotherapy during and after electric shock therapy. The results were poor.

It is the dramatic symptoms of the psychoses which are accessible to shock therapy but not to psychotherapy. On the other hand, neuroses as well as borderline cases between neurosis and psychosis do poorly under shock therapy. Thus the two therapeutic approaches seem to have quite a different field of application. Dr. Shepley is right in saying that convulsive therapy also promotes accessibility to a later psychotherapy, but this is an application of secondary importance. The types of illness that respond to shock therapy most convincingly do not yield to psychotherapy during the psychosis, and in our experience do not need it afterwards.

It is certainly more satisfactory and appeals more to our intellectual needs to treat with psychological means than to press the button of an electrical machine. No one who has seen the predictable spectacular results in depressions and catatonic stupors or excitements will object to convulsive therapy. But it is disappointing for us to see such results with a method which we are still completely unable to understand. The great progress made in a group of patients where we were helpless before should give us satisfaction as physicians, even though it interferes with the concept of mental illness as a psychologically determined and, therefore, psychologically treatable disease. It should reopen the question of the process underlying mental illness. Our attitude should be not to object to a method because it is empirical, but to use the empirical knowledge for a new scientific approach to the basic problems of psychiatry.—I am, etc.,

New York. LOTHAR B. KALINOWSKY.

Acute Respiratory Conditions in African Soldiers

SIR,—Lieut.-Col. W. W. MacNaught and Major Murray-Lyon have drawn attention to such an important problem in their article on acute respiratory infections in Africans (Sept. 11, 1943, p. 324) that it should not go without support from others who have shared their experience.

During almost the same nine months to which they refer, but on the other side of the continent, a large hospital for East African soldiers admitted 2,071 cases eventually diagnosed as "pneumonia," placing this condition second only to dysentery as a cause of medical admissions. But the case mortality of pneumonia in this hospital was more than double that in the West African series, and in nine months 85 patients died. In fact, many more patients died from pneumonia than from any other group of diseases in the medical wards, and this in spite of the rapid response to sulphapyridine shown by the majority of patients..

The following two observations in support and amplification of the West African experience are put forward as the result of post-mortem examinations upon 83 Africans who died of pneumonia. (*a*) Upper lobe involvement was common; the right upper lobe was affected in 52 cases and the left upper lobe in 31. (*b*) A large proportion of the deaths occurred either very early or very late in the disease. In the former the picture was that of septicaemia with minimal lung changes. In the latter there appeared to be a delay of resolution in the areas first affected, so that these lobes remained in a solid, cheese-like condition, while successive involvement of other lobes gradually reduced the remaining available air space. These latter cases had generally proved resistant to sulphapyridine, and one is led to suggest that lack of resolution may have been partly mechanical (the African dislikes moving his chest when ill) and partly due to a damaged lymphatic system, which, no doubt, had been previously visited by many nematode larvae in transit.

It is of interest that the second most potent cause of death in the East African hospital in these nine months was cerebrospinal fever (35 deaths)—another "European" disease—adding weight to the authors' contention that familiar diseases should not be neglected in the Tropics.

In the same article there is an implied criticism of our lecturers in tropical medicine, in that they do not stress the importance of respiratory infections in black troops. It is true they do (or did) not, but they may be excused if they assume that we who are sent to the Tropics go with a working knowledge of European diseases. If under a tropical sun we lose our perspective in medicine it is not their fault; yet that perspective is only too often lost, and Lieut.-Col. MacNaught and Major Murray-Lyon do well to attempt to restore it.—I am, etc.,

A. B. RAPER,
Major, R.A.M.C.

Tonsillectomy in Children

SIR,—Mr. T. B. Layton is often original and always dogmatic, but on the occasion of his letter in the *Journal* of March 11 he eclipsed his previous best. Some twenty years ago I remember the late Mark Hovell addressing the Section of Laryngology at the R.S.M. and there advocating that a portion of the tonsil should always be left; the suggestion was rejected unanimously. Even so, history repeats itself, and here we have the hydra-head raised again.

For years I had perforce to remove pieces of tonsil left behind by my colleagues, and some, I regret to say, of my own. To-day I felt that at last, as a specialty, we knew how to remove tonsils. No, I hope my friend Mr. Layton will stick to his own motto: "The tonsil, all the tonsil, and nothing but the tonsil," or a useful paraphrase, "All or nothing." Remove the whole tonsil or leave it alone, and this includes treatment by diathermy, caustic paste, and cauterization. In view of his recommendation to leave a small portion of the tonsil behind, I am not surprised at his evident reluctance to undertake the operation.

The letter of Mr. Carew-Shaw was sane and well balanced. I know of no operation which, when properly carried out in suitable cases, has a greater value to a child—both physically and mentally—a fact which is well recognized by parents themselves.

I am in agreement with Mr. Layton that a careful examination should first be undertaken. I would make the constructive suggestion that this examination should always include the antra; and where the antra are found to be dull they should be washed out. A persistent antral infection in children is often the cause of colds and infections following an otherwise successful operation.

The operation is not to be undertaken lightly or inadvisedly, but only after due consideration, and with skill, care, and

gentleness, while mental shock must at all costs be avoided. When so carried out the operation is of great value in promoting the health of the rising generation.—I am, etc.,

Birmingham. MUSGRAVE WOODMAN.

SIR,—We entirely agree with the views expressed by Mr. T. B. Layton in his recent letter regarding the question of tonsillectomy in children. He states that "no such administration has as yet been set up which will give that minimum of a quarter of an hour between the parent upon whom the responsibility for decision rests and the surgeon in whose hands the responsibility for advising the operation is finally put." We think it might be of interest to him to know that such an administration was initiated in a general hospital eighteen months ago. Here cases may be reviewed weekly or monthly by a team of workers whose aim is a fuller comprehension of the functional efficiency of the entire respiratory tract, with an attempt at classification of "criteria" whereby the operation of tonsillo-adenoidectomy may be considered justifiable and good results reasonably expected.—We are, etc.,

F. C. W. CAPPS.
Willesden General Hospital. E. GWYNNE-EVANS.

Infiltration of Oxygen for Gas Gangrene

SIR,—Over ten years ago I made short notes of the treatment and progress of a case of gas gangrene which occurred in a hospital where I was a house-surgeon. I lost the notes soon after, but came across them recently and give them below in detail.

On Aug. 28, 1933, a well-built man of 43 years was admitted to hospital following a road accident. He had sustained a compound fracture of the right ulna in its upper third, the wound being on the posterior aspect of the arm, and a lacerated wound of the right antecubital fossa. He had no other injuries. Under gas-oxygen-and-ether anaesthesia the fragments of the ulna were brought into alignment, the wounds loosely sutured, and small drainage tubes put in position. Antitetanus serum was given.

On the afternoon of Aug. 29 the patient's temperature shot up to 103° F. and his pulse rose to 90. On the following morning the right upper arm in its lower third and the right elbow region were found to be brownish red in colour, swollen and painful, and from the wounds there was oozing a dark foul-smelling discharge. Anti-gas-gangrene serum was given—all we held ourselves and some borrowed from another hospital, a total of 20 c.cm. The surgeon in charge of the case opened the wounds extensively, made multiple incisions in the infected area, and freely applied hydrogen peroxide. The surgeon, in consultation with his colleagues, decided against amputation because of the rapid spread of infection and the attendant deterioration in the patient's general condition.

By the afternoon of Aug. 30 it was distressingly obvious that the treatment was going to be of no avail. By evening the infection had spread up the arm to involve the pectoral and upper scapular muscles. Crepitus was easily palpable throughout the affected area. The patient was restless and anxious and the prognosis could not have been worse. The senior house-surgeon, Dr. D. M. Mackechnie, decided to try the effect of pure oxygen on the infected tissues. An ordinary intravenous needle was fixed to the end of a thin rubber tube, the other end of which was attached to the outlet valve of an oxygen cylinder. I got the patient under ether anaesthesia while my colleague thoroughly infiltrated with oxygen the whole of the upper arm and the affected areas on the chest and shoulder. Oxygen was also injected into apparently still healthy tissues ahead of the advancing and well-marked line of demarcation. The existent swelling was accentuated by the blowing up of the tissue with oxygen.

On the morning of Aug. 31 we could hardly believe our eyes. The skin over the chest and shoulder was practically normal in colour, while on the upper arm it had improved considerably in appearance; obvious swelling had gone from the shoulder and chest and was subsiding in the arm. There was no tenderness on pressure on the chest and shoulder and very little discomfort in the arm. Round the elbow-joint there was no change in appearance and swelling, though the stench did not seem to be so overpowering as previously. There was still some crepitus here and there in the chest, shoulder, and arm, but whether from oxygen or anaerobic action it was impossible to say.

The improvement, local and general, was as dramatic as had been the onset and spread of the gangrene. On Sept. 1 the surgeon amputated the arm slightly above mid-humerus. No attempt was made to form a flap or to trim the stump, which was loosely covered with dressings soaked in hydrogen peroxide. Two or three days later the bone stump was trimmed and a flap fashioned. The patient made an uneventful recovery thereafter.

It seems to me that the use of oxygen as described above in the treatment of gas gangrene is reasonable and logical, though I personally would not have thought of getting at the anaerobes in a manner which proved so devastating to them. The anti-gas-gangrene serum given and the recognized surgical measures taken as soon as gas grangrene was suspected did nothing to arrest the alarming spread of the infection. One fact, proved beyond any shadow of doubt to all those concerned with this case, was that the gas gangrene was not only arrested but cleared from heavily infected tissues by the intramuscular administration of oxygen.

One cannot, of course, suggest that all other cases of gas gangrene would react so dramatically and so satisfactorily to the same treatment. During the past ten years I have frequently described this case to professional colleagues. Some listened with apparent interest, others with obvious disbelief. Now, it may be that this method of treating gas gangrene has been tried out by others, but I have never read of it, nor have I met any medical man who has heard of its having been used.—I am, etc.,

N. M. MACDONALD,
R.A.F.V.R.

Cause of Silicosis

SIR,—In letters appearing in the *Journal* (1937, **1**, 195, 474) I gave hypothetical reasons and suggested *modus operandi* permitting a conclusion that the cause of silicosis might be physical in a mechanical sense rather than chemical: in short, involving the laceration of pulmonary tissue as a result of the sharpness of the particles inhaled.

Recently indirect evidence (Cantor Lecture, Royal Society of Arts, 1943) has been forthcoming which appears to support such a mechanical causation—namely, the work of H. V. A. Briscoe and others indicating that the destruction of weevils by inorganic dust is due to the physical characteristics of sharpness and relative smallness of the particles. There appears to be a clear identity in the two cases—(*a*) human lungs and (*b*) weevils—as regards the *modus operandi* of sharp particles. This identity is: *continued movement* of the respective tissues relative to and under the sharp particles continuously present. It is known that such movement exists in the human lung both before and *after* arriving particles have lost their own momentum. It seems probable there is continued subparticle movement of cuticle in the case of weevils. This probable identity is extremely significant as indicating the possible mechanical cause of silicosis. While the laceration consequent on the weevil cuticle being drawn to and fro under numerous cutting points would explain certain data in the case of weevils, in the case of silicosis such parallel lacerations in the human lung might readily admit the finest particles with certain (possibly chemical) reactions as *effects* of the mechanical *cause* of silicosis.—I am, etc.,

S. C. BLACKTIN.

Service Medicine?

SIR,—The enclosed extracts from a letter I have received from a colleague in the Forces so accurately express the views of many serving members of our profession that I feel it should receive wider publicity. I would be grateful, therefore, if you would find room for them in the *Journal*, as we doctors here would prefer them to be published in your paper.—I am, etc.,

J. A. VALENTINE.

*** The extracts, after some further abridgment, are printed below:

". . . The first premise to what I want to say is so important as to be almost the foreground of the picture. It is that the civil 'front' carries far heavier burdens in feeding, comfort, transport, and relaxation (especially alcohol) than the Services, inasmuch as I have seen them, and yet is far worse off for doctors. This is bureaucracy's passion for over-staffing. Here, for 500 beds (and we have never yet had 300 occupied), there are 15 doctors (not all fit to practise, of course). True, we have out-patient work to do; true, we might have had heavy casualties, necessitating 48 hours' work on end, perhaps; true, it is the Tropics and lethargy is rife. But I doubt if any of us does more than two afternoons per week, most are ready to go home by 12.30 p.m. (we start at 9.30 a.m.), and I am almost certain that one man has *never* left the hospital later than 12.30 p.m. in 18 months. Another leaves at 12.45 p.m. regularly

and writes his private letters in his office during the morning. For me, work has increased, but my average attendance per day for the six months ended Aug. 31, 1943, beat my previous records and yet did not reach 4 patients a day.

"So much for over-staffing. Now about bad staffing. In this area there are two men with M.D., M.R.C.P., yet our medical specialist is a G.P. and admits freely that he is not up to the level of consultant work. Elsewhere there is a specialist in another branch (not medicine nor mine) with 15 years' experience on his honorary staff at home; the man who practises this specialty in the hospital is painfully ignorant, and even I can teach him his job in respect of something that he claims to know and I need not. In fact, his reports are a waste of good paper. But the other man is not appointed to practise his specialty, and so he gets none of the one thing he really can do. And that has been so for 18 months.

"This is the background against which to see my attitude to the idea of a State Medical Service. I have seen too much of a bureaucracy in medicine in the last 4¼ years to have any hope of respecting the body that, because it pays me, claims to direct my treatment of patients. I am convinced that a State Medical Service will lead to precisely the same difficulties in the course of time that irk the genuine doctor who happens to be in the Services. These 4¼ years have shown me that bureaucracy puts importance first on paper-work, next on the staff, and last of all on the patient. It has been said that 'it does not matter if a patient dies so long as he dies in red ink.'

"Here is a fact which, to my mind, typifies the complete antagonism of a bureaucracy to the system of apprenticeship which has always been, and fundamentally still is, the real high-light of medical training. Every C.O. (even if it is only an executive officer) renders confidential reports on his officers, even the doctors; bad reports must be shown to the officer concerned. But a medium report, or a good one, or one that 'damns with faint praise' must not be so shown. So it boils down to, 'Never encourage your juniors.' How false to the whole atmosphere of training in the learned professions! And how true to the type that knows, as the lower civil servant does, that its authority is not from within and by virtue of professional respect but from without, like a uniform bought from a tailor. This fear of encouraging the junior extends to almost active attempts to stop the research-minded from further progress. It is markedly helped by the passion for 'put it on paper and submit it properly,' and further aided by the distance that exists between the controlling power and the patient. This distance is less geographical than spiritual. The men who 'run' the politics of civilian medicine are in touch with doctors who work and/or the patient; of the men who run a bureaucratic medicine few would know at which end of the patient to start!

"And from my own personal experience I can substantiate the things I have said here. Of equipment, the less said the better; you know my views, and in a S.M.S. we shall certainly have to indent in duplicate and wait a month to get a new Graefe knife, *and* we shall have to prove that the old one is unserviceable. I still have a pitiful supply of apparatus, surgical instruments, and even sutures, and the authorities do nothing, so I have to use my own and even to buy fresh for myself; this after 18 months. I protest vigorously (but who can hear my protests?) against the reorganization, nay re-creation, of medicine while the vast majority of those whom it will affect chiefly are muzzled in the Services.

"Lastly, is not medicine now more advanced towards the community ideal of service for others than any other section of the community? Can any other section show such a degree of progressive spirit and such an amount of progress made towards service as medicine? I think not. But because we are the most easily browbeaten, the busiest, and the least organized, we have to be the 'Aunt Sally.' How I sigh to be back home again and ensconced in the worries (but worth-while worries) of civil practice! Here it's petty politics, lobbying, back-scratching, and form-filling all day long."

India's Population Problems

SIR,—Before deciding that the medical profession should advocate the extension of birth control in India as a contribution towards an improvement in the living conditions it is essential to decide what are the economic factors producing the extreme poverty and danger of famine under which the masses live. It is saddening to see in the correspondence on this subject so many supporters of the Malthusian doctrine that increase in population tends to outrun the food supply. Prof. Blacklock concluded his article by giving support to this belief. Although he mentioned that Henry George emphatically denied the theory, yet by a misinterpretation of a statement by George he claimed that the great economist was in doubt as to the effect of an increase in population. To anyone who has carefully read George's book *Progress and Poverty* it must be obvious that he was convinced that increase in population not only does not lessen but, in fact, increases the average wealth per head; indeed, so clear and logical are his interpretations of the known facts that it is impossible not to be convinced of their correctness. Wealth in any form is equivalent to food, since it can be exchanged for this commodity on the world's markets. It follows logically that the greater the population the more remote should be the danger of poverty and famine.

The essential condition is access to the gifts of Nature, embraced in the term "land," without which no wealth can be produced. Under the present well-nigh universal system of land monopoly this access is denied or is granted only on payment of such a toll in rent as leaves the actual producer the bare minimum for subsistence. Under these conditions no reserve of wealth can be built up by the labourer, and in countries such as India a bad harvest must therefore result in famine, unless there is an organized distribution of food at the expense of others. In this country the same system produces recurrent industrial depressions with millions of unemployed, who would starve unless maintained at the expense of others.

The discovery and proof by George of the cause of these evils and their remedy by the taxation of land values is, in the science of economics, as important as the discovery of the bacterial cause of disease by Pasteur was in medicine. It has met with unscientific criticism similar to that with which Pasteur's work was greeted, and unfortunately is even now recognized only by a small minority of people, although in the 60 years since its publication no valid objections have been forthcoming. Economics is still treated as an art rather than as the exact science which Henry George showed it to be, and such measures as the regulation of the rate of reproduction as a solution for the evils of poverty, unemployment, and famine are akin to the philosopher's stone in that they are based on beliefs which have been proved false. They are therefore as likely to be successful as was the search of the alchemists.—I am, etc.,

St. Andrews, Fife. H. A. HAXTON.

Consultant and Specialist Services

SIR,—We find ourselves in sympathy with Mr. Hamilton Bailey and with Mr. H. J. McCurrich in their distrust of the uncertain and dimly lit path which is apparently being prepared by the Royal Colleges for the consultant and specialist. The light shed on it by the Presidents in your issue of Jan. 15 was but a fitful flicker, serving only to perplex and mystify those of the profession who, like ourselves, are not at present in touch with what might be termed "medical politics." Glimpses of mysterious comings and goings, of esoteric meetings and plannings, are vouchsafed to us from time to time, but serve only to increase our unease.

With all respect, Sir, may we suggest that the Royal Colleges are not the most suitable bodies to deal with the question? We venture to doubt if they indeed possess the necessary statutory power to draw up standards for, and to prepare a register of, consultants (which seems to be the object ultimately to be attained). The General Medical Council presumably has such power, is representative of all professional interests, and is universally respected as an entirely fair and unprejudiced body. If a register of consultants and specialists is to be prepared, and criteria laid down to be fulfilled by those who in future wish to take up such work, we submit that the General Medical Council is ideally fitted for the task, and is, indeed, the only proper tribunal to undertake it.—We are, etc.,

J. R. FORBES, M.D., M.R.C.P.,
Surgeon Lieut.-Cmdr., R.N.V.R.
H. R. I. WOLFE, F.R.C.S.,
Surgeon Lieut.-Cmdr., R.N.V.R.

Intelligence and Season of Conception

SIR,—The following objection to Surg. Cmdr. Fraser Roberts's arguments (March 4, p. 320) seems to me to be a fatal one. Intelligence is by no means the only quality alleged by Fitt and others to vary with the season of conception. On the contrary, to quote from your own columns (Sept. 5, 1942, p. 284): "Those conceived during the period autumn–winter are on the average slightly *taller, heavier, stronger in hand-grip,*

and more intelligent than their fellows, as well as *less likely to die during the first month of neonatal life"* (my italics). Hence Fraser Roberts must show either that high intelligence is usually combined with exceptionally good physique or else that good physique also, and independently of intelligence, leads its possessors to beget children in autumn and winter.

Meanwhile those intelligent and well-informed people who want to have big, strong, intelligent children (and who are prepared to put up with the hearty handshakes) will continue to try to beget them between August and January.

It may be worth while to note in passing that if, after all, it is the season that influences intelligence, then, as this information becomes moderately accessible, intelligent people will be the ones to apply it. They will thus make their hereditarily intelligent offspring even more intelligent, and so, secondarily, intelligence will influence the season too. There will in fact be a "virtuous circle."—I am, etc.,

Medical School, London Hospital. W. J. PENMAN.

Obituary

SIR DAVID PRAIN, C.M.G., C.I.E., LL.D., M.B., F.R.S., Lieut.-Col., I.M.S. (ret.)

We regret to record the death on March 16, at Whyteleafe, Surrey, of Sir David Prain, the eminent botanist.

Born in Scotland on July 11, 1857, David Prain was educated at the Parish School, Fettercairn, the Grammar School, Aberdeen, and the Universities of Aberdeen and Edinburgh, where he took the degrees of M.A., M.B., and C.M. After acting as demonstrator of anatomy in the College of Surgeons, Edinburgh, and at Aberdeen University, he entered the Indian Medical Service in 1884, and three years later was appointed curator of the Calcutta Herbarium, succeeding Sir George King in 1898 as superintendent of the Royal Botanic Garden, Calcutta, and director of the Botanical Survey of India. From 1887 onwards during his service in India, Prain published a constant stream of scientific papers, mostly botanical, with a few on other subjects, such as his articles on the Angami Naga tribe, the hot springs of the Namba Forest in Upper Assam, and the fauna of Narcondam and Barren Island. His methods and foresight are illustrated by the somewhat unusual way in which he distributed his reprints: instead of sending these out separately, he retained them for a series of years, finally issuing them in two volumes, *Memoirs and Memoranda* (1894) and *Botanical Notes and Papers* (1901). These included papers on the floras of the Andaman, Nicobar, and Laccadive Islands, and on the races of wheat and the mustards cultivated in Bengal, in addition to many descriptions of new plants and revisions of genera. From 1895 to 1905 he was professor of botany at the Medical College, Calcutta, and he was also a trustee of the Indian Museum (1898–1907) and secretary of the Board of Scientific Advice for India (1903–4). The honour of C.I.E., conferred on him in 1906, was a fitting recognition of his services to Indian science in general and to botany in particular.

The second period of Prain's career coincided with his term of office as director of the Royal Botanic Gardens, Kew (1905–22), where he added to his reputation as a prudent and successful administrator, receiving the C.M.G. and a knighthood in 1912. Though his official duties left him but little leisure, he was able to continue his botanical researches, among which may be mentioned an account of part of the large and difficult family Euphorbiaceae for the *Flora of Tropical Africa*. During this period he served on the councils of numerous scientific societies and institutions, including the Linnean Society (president, 1916–19), Royal Society (treasurer, 1919–21), and John Innes Horticultural Institution (chairman, 1904–34), and was president of the Association of Economic Biologists (1919–21).

His retirement from Kew in 1922, at the age of 65, meant for Prain merely a change of work. He became successively director of Forest Products Research (1922–5), chairman, Animal and Plant Products, Imperial Institute (1926–35), and treasurer of the Ray Society (1932–5). The wide range of his interests was reflected in his presidencies of the Gilbert White Fellowship (1921–4), Imperial Botanical Conference (1924), Quekett Microscopical Club (1925–7), and Essex Field Club (1930–3). Perhaps the most important botanical publication of his later years was a monograph on the Asiatic species of yam (*Dioscorea*), prepared in collaboration with Mr. I. H. Burkill.

Among the honours conferred on Prain were the Barclay Medal of the Asiatic Society of Bengal (1909), the Linnean Medal (1935), the Albert Medal of the Royal Society of Arts (1925), and the Victoria and the Veitch Medals awarded to him by the Royal Horticultural Society (1912 and 1932).

H.H. THE MAHARAJA OF GONDAL, G.C.S.I., G.C.I.E., LL.D., D.C.L., M.D., F.R.C.P.Ed.

His Highness Bhagvat Sinhjee, Maharaja of Gondal, who has died in Bombay, was one of the most remarkable men in India. He was born on Oct. 24, 1865, son of Thakore Saheb Sagramji of Gondal, had his early education at the Rajkumar College, Rajkot, and was elected a Fellow of the University of Bombay in 1885; then he risked the loss of caste and kingdom by crossing the sea to study medicine at the University of Edinburgh. He graduated M.B., C.M. in 1892; in 1895 he proceeded to the M.D. and was elected F.R.C.P.Ed. In recognition of his intellectual gifts, his wide learning, and his services to the State over which he ruled the Maharaja received the honorary degrees of D.C.L. from Oxford and LL.D. from Edinburgh, and the Royal Society of Edinburgh elected him a Fellow in 1909; he was also a member of the Royal Astronomical Society and of other learned bodies in Great Britain and Ireland. Soon after his accession in 1885 he abolished all taxes in Gondal, and that State, which is the healthiest as well as one of the best ruled in India, has been run largely on the revenue of the railways built by him. In 1935 he followed the old Rajput custom of celebrating his jubilee by giving away his own weight in gold to charities. His publications included the *Journal of a Visit to England*, a *Short History of Aryan Medical Science*, published in 1895 and dedicated to his teacher Sir William Turner "in cherished remembrance," and a two-million-word dictionary of the Gujarati language, which took him 10 years to compile. The Maharaja was created K.C.I.E. in 1887, G.C.I.E. in 1897, and G.C.S.I. in 1937.

F. L. ANGIOR, O.B.E., M.R.C.S.

Dr. Frederick Leigh Angior of Wigan died in Stanley Hospital, Liverpool, on March 14, at the age of 74. He was born and educated in Liverpool, and after qualifying in 1896 joined his elder brother in practice at Wigan 48 years ago. Dr. Angior was elected a member of the B.M.A. in 1898 and took a very active part in the local work of the Association, serving for several long periods as hon. secretary of the Wigan Division and as chairman in 1929–30. He received the O.B.E. for the manner in which he carried out the duties of senior medical officer to the Wigan Division of the British Red Cross Society during the last war.

A colleague and personal friend writes:

The death of Dr. F. L. Angior brings to an end the long period of self-imposed and self-sacrificing service which he rendered on behalf of his fellow practitioners in all medical affairs in the Wigan area. For over thirty years he had been secretary of the Wigan Panel Committee and for over twenty-five years he was the honorary secretary of the local Division of the British Medical Association, had served on the Wigan and Lancashire Insurance Committees, and was secretary of the Local Medical War Committee.

Dr. Angior was of commanding appearance, always well groomed, with an old-world charm of manner and an urbanity and kindliness of nature that made him the ideal person to undertake the various honorary duties he so ably performed. He attended his many meetings regularly and punctually, and even his holidays were chosen to coincide with the Annual Representative Meetings of the British Medical Association. By his assiduous attention to the details of the work he acquired a store of knowledge on all matters relating to the profession and was ever able, and willing, to help, from his ripe experience, any practitioner who desired advice or information. He was always accessible, ever friendly, and endued with a keen sense of humour, while his hearty and infectious laugh made everyone feel at home with him. His broad sympathies, his tact, wide culture, and profound knowledge of human nature helped, in great measure, to bring about a happy and contented brotherhood in Wigan, where for years the practitioners have worked in harmony.

Dr. Angior's sense of duty was high. He was aware for some time that he was a very sick man, and, without doubt, had not the

present war arisen, with its increased work and responsibilities, he would have taken the time to have his condition investigated at an earlier date than he ultimately did. He chose, however, to work on, and died practically in harness, leaving a sense of deep loss in the hearts of his colleagues, who, one and all, feel the sincerest sympathy for his elder brother, Dr. T. M. Angior, with whom he has worked in happy partnership for nearly fifty years. Almost all Dr. Angior's time in recent years was given to his professional duties and honorary appointments, but he had a life-long interest in music and dramatic art. He was a Freemason of many years' standing. In his daily life Dr. Angior embodied qualities expressed in phrases he knew well—he was "courteous in manner, easy of address, steady and firm in principle." His place in Wigan, both socially and professionally, will be very hard to fill, but he suffered much and has earned his rest. *Ave atque vale.*

J. O.

On Feb. 27 VIVIAN E. RIDEWOOD, B.A., M.R.C.S., L.R.C.P., died at his home in Woodford. He had practised in Bethnal Green for 35 years, except for a period during the last war, when he served over-seas as captain in the R.A.M.C. He had been M.O. to the Post Office and was an examiner for Air Force Cadets and M.O. to the Pioneer Corps, and from 1938 to his death was the London University representative on the Hackney and Spitalfields Exhibition Foundation. But it was as a physician in the districts of Bethnal Green, Spitalfields, and Shoreditch that Dr. Ridewood was best known. He had a large practice in this poor and crowded industrial district, and was much loved for his cheerful presence and his unfailing courtesy and attention to all his patients. He died after a few months of great pain, borne with wonderful cheerfulness and exemplary patience. A memorial service at St. Philip's, Bethnal Green, was very fully attended by his late patients. He will be missed by his fellow practitioners, to whom he was always a good friend.—H. C. D.

The Ashton-under-Lyne district has sustained a severe loss by the death on March 6, after a short illness, of Dr. W. H. HUGHES. He was 79 years of age, was at work to within three weeks of his death, and was the oldest medical practitioner in the area. William Hugh Hughes graduated M.B., C.M., and B.Sc. at Edinburgh in 1889 and also studied at Guy's Hospital and Vienna. In addition to private practice in the town for over fifty years he had served as examining factory surgeon, surgeon to the Borough Police, and honorary and consulting surgeon to the District Infirmary for a commensurate period. He joined the British Medical Association in 1902 and represented his Division at the A.R.M. held in London in 1917.

News has been received of the death on Feb. 19 at Fort Rosebery, Northern Rhodesia, of Dr. S. JEAN MEIKLEJOHN, founder of the Chilubi Hospital and of the Leper Settlement at St. Margaret's. She graduated M.B., Ch.B. at Aberdeen in 1906, was Carnegie Research Fellow in 1912–13 and John Lucas Walker Student 1913–15, and for a time was medical officer to the Dunfermline College of Hygiene and Physical Education. Dr. Joan Lamplugh sends the following appreciation: At an age when most people are content to retire and occupy their leisure with hobbies, Dr. Jean Meiklejohn launched into the strenuous and difficult task of being the pioneer doctor in the White Fathers' Mission at Bangwoulu in Northern Rhodesia. She went to Chilubi Island, which lies on Lake Bangwoulu on the edge of the swamps where Livingstone died, and in 1937 founded the Hospital of St. Joan of Arc at Santa Maria Mission. The nearest hospitals were each three days' journey by canoe, bicycle, and mail lorry, and for sick Africans without such facilities the journey would have taken very much longer, so the hospital met an urgent need. Working among a primitive and difficult people, with lack of money and materials and skilled help, she nevertheless built up a hospital second to none of its kind. A severe thecal whitlow which she had to open herself without anaesthesia disabled her from operating, and was the occasion for another doctor to join her. From then onwards she concentrated on the leper work and undertook a survey of leprosy in the Bangwoulu lake region. The expansion of the work at Chilubi made it necessary to move the lepers from that overcrowded island, and in 1942 she founded a leper colony on the north shores of the lake at St. Margaret's, Kasaba. She was undaunted by the arduous conditions of bush life, and cheerfully undertook supervision of the building of the new colony from the time when the first vegetables in the garden were not yet ready and the timber for the houses not yet cut. She lived for some time in a native hut, and there, as elsewhere, maintained that atmosphere of exquisite taste and civilized living which she carried round with her even when she was living under canvas. She was a painstaking, methodical, and exact clinician and tireless in the treatment of cases under her care. Although when speaking of the surgical needs of Chilubi she complained that she was "too old a dog to learn new tricks," yet she did in fact become very skilled in leprosy work. She took a long view of the work and was keen on everything that could benefit her lepers, down to the smallest detail of building and gardening. She left the impression of her gracious personality on everything she touched; her loss is all but irreparable and will be most deeply felt by her lepers, to whom she was unfailingly kind. War conditions make the search for a successor an almost hopeless task. She died of blackwater fever.

Dr. A. Griffiths Farr writes from Tanganyika Territory: I have only just received news of the death of FRANCIS WILFRID WILLWAY in a personal letter from home. His obituary notices will, I am sure, have paid due attention to his work in the written art of surgery no less than to his work on the practical side, which was latterly concerned mainly with neurosurgery. They will also have drawn attention to his great organizing ability, to which the citizens of Bristol owe a great deal. It was my privilege to be in contact with F. W. W. for four years as a student and houseman. I shall never forget his teaching, whether by the bedside or in the lecture room; it was clear, logical, concise, and so amazingly complete and delivered so well that it was impossible to forget the main points made. His treatment of patients and of the patient's feelings was admirable and was an object lesson to all. Indeed the closing years of his life were a remarkable example of strength of will and tenacity of endurance. Often in severe pain he continued to work at a phenomenal pace, nor did he neglect, as he might so easily have done, the tuition of students. In his early death medicine has lost an able son and the world a fine citizen.

A correspondent writes: The death of Mr. ARTHUR DONALD GRIFFITH (tributes to whose work and character appeared in the *Journal* of March 18) will be regretted by a wide circle of London colleagues and patients. For a long period he served on the council of the Medical Defence Union, of which he was at the time of his death one of the senior members; on all matters connected with his specialty, as well as on other topics, his opinion was always greatly valued by his colleagues. Stricken recently by an inoperable form of malignant disease, he was able to talk of the inevitable result with a kind of wry humour; this did not conceal the fortitude with which he faced his misfortune. A high-minded as well as an efficient surgeon, his death leaves London the poorer by the loss of one who held a well-deserved place in the affection as well as the esteem of his fellow workers.

Correction.—We regret that through a mistake in the card index the last sentence of the obituary notice of Sir Norman Gray Hill (March 25, p. 438) was erroneous. He was unmarried, and therefore left no widow.

Medico-Legal

RESPONSIBILITY AND CULPABILITY

At a joint meeting of the Medico-Legal Society with the Section of Psychiatry of the Royal Society of Medicine a paper was read by Dr. W. NORWOOD EAST on responsibility and culpability.

Dr. East said that the psychiatrist was concerned in court with the defendant's fitness to plead, and with the question whether, if he was fit to plead, he had suffered when the crime was committed from a defect of reason due to disease of the mind which prevented him from knowing the nature and quality of his act or from knowing that it was wrong (the M'Naghten rules). The establishment of sanity or insanity on arraignment offered relatively little difficulty, and medical criticism was reserved for the criteria of irresponsibility laid down in M'Naghten's case. The law, however, was elastic, and Dr. East had no doubt that the present procedure and practice resulted in justice to the public as well as to the offender. If a medical formula of criminal responsibility were introduced, the law might insist on a rigid adherence to its specifications, with resulting hardships to offenders and embarrassment to psychiatrists. The urgent need to-day was rather for an improvement in the quality of the evidence given by forensic psychiatrists. Such evidence sometimes stultified itself because the witness allowed an emotional distaste for the legal restrictions concerning responsibility to overcome his scientific judgment. This could not help justice, defendants, or psychiatrists. Medical witnesses would contribute more to the common good by leaving tests of responsibility to the lawyers, and themselves considering more closely the various mental conditions which might properly be regarded from the medical point of view as lessening culpability. No amendment of the law must weaken the defence of the community; nor could the scientific study of criminals always produce exact results.

A convenient classification separated offenders into six main groups: normal, subnormal, mentally defective, psychopathic, psychoneurotic, and psychotic. The conclusion that normality was indefinable was not so sterile as it might appear and might avert mistake in diagnosis. Everyone had his own base-lines of thought, mood, and behaviour, which fluctuated within personal limits. If the fluctuations were dissimilar and excessive, there might be reason to doubt the person's normality. On the other hand, though less violent fluctuations might be evidence of normality, the unfluctuating person was probably fully responsible and therefore punishable. Dull and backward persons formed a large and important class of criminals. They could usually be recognized without difficulty if all the facts were known. There was no reason to consider them irresponsible, but their culpability might well be lessened, as it was in many cases even of high-grade defectiveness.

The Psychopath: A Therapeutic Dilemma

The criminal psychopathic personality might be tentatively defined, Dr. East said, as one who was persistently unable to adapt himself to social requirements on account of quantitative peculiarities of impulse, temperament, and character. Medical evidence and ideas might be more precise and practical if the non-progressive cycloid and schizoid personalities were included in this class, which also contained offenders who showed permanent psychic inferiority, temperamental instability, and psychological maladjustment; also the alcoholics, drug addicts, true sexual perverts, and paranoid personalities. Certain criminal conduct might be profitably classified as perversions—analogous to sexual—of the acquisitive, aggressive, and gregarious instincts. The constitutional inability of the psychopath to harmonize with other persons and situations exaggerated a criminal potentiality. The nearer the condition seemed to lie to mental disease and the further from an anomaly of character, the more inclined would the psychiatrist be to consider whether culpability should be modified. The dilemma of treatment arose particularly in this group. The law might impose a short and ineffective sentence; medically, prolonged detention and treatment might be essential if any possibility of social adaptation were to be exploited. An insufficiently educated public might, however, refuse to tolerate prolonged detention for an offence for which another person might be given a light punishment.

The association of crime with hysteria and anxiety states had probably been underrated and its association with obsessional states overstated. Neurasthenia was occasionally a direct cause of criminal behaviour. Crime was often associated with an early form of psychosis in which the indications of mental disease were so tenuous that the accused had to be adjudged culpable as well as responsible. The psychiatrist might be powerless to prevent a serious crime because the potential offender refused to accept medical treatment and the necessity for his care and control could not be demonstrated with certainty to others. Dr. East deeply regretted the lack of a legal method of dealing with the early psychotic potential lawbreaker. This lack, like the neglect to restrict the antisocial and antifamily activities of the alcoholic, was, he thought, a crime of society against itself as well as against the potential offender.

The individual treatment of offenders began with the opening of Pentonville Prison in 1842 and had been continued with the establishment of Borstal institutions in 1908. Some of the proposals in the Criminal Justice Bill, 1938—to establish remand centres and State remand homes for the special medical observation of the young offenders; to permit probation orders to include a provision that offenders who, though not certifiable as insane or mentally defective, were suffering from some form of mental illness or abnormality which was susceptible to treatment might be required to submit themselves to mental treatment; and to introduce sentences of corrective training and preventive detention for special types of offenders—were particularly interesting to psychiatrists. With collaborators, Dr. East had elsewhere recommended the establishment of a special kind of penal institution where research could be carried out into the problems of criminal behaviour and abnormal offenders could be scientifically treated. In conclusion, he said he was confident that the numbers of those whose culpability was modified could be ascertained by investigation, the difficulties of their diagnosis overcome by research, and advances made in the individualization of treatment. For practical purposes the assessment of culpability largely depended upon accuracy of distinction between the inherent constitution of the offender and the results of the impact of disease. The more satisfied the psychiatrist was that a crime was due to faults of character and not to the effects of disease, the more reason would he have to consider the lawbreaker responsible, though he might believe that his culpability was modified.

Responsibility and Restraint

The CHAIRMAN (Mr. Roland Burrows, K.C.) observed that a society could survive only if it lived according to rule. The rules of criminal law were difficult to establish and hard to alter and therefore tended to lag behind contemporary opinion. Thus the offender sometimes received much sympathy from persons who were not minded to break the law. Moreover, criminal justice was largely administered by elderly persons whose ideas were based upon the experience of a generation or two ago and who were somewhat impervious to later ideas. With the numerical increase of our society the importance of the individual offender had grown. If an offender was to be treated as irresponsible, the necessary corollary was that he was to be put under some form of restraint—which was in itself punishment. For this kind of restraint society must look to the medical profession. There was much to be said for the proposal to restrict the function of the court to finding guilty or not guilty and to give a separate authority the decision on what should be done with an offender, who should, if possible, be turned into a law-abiding member of society or secluded from it. The duty of sentencing offenders was the most anxious and difficult duty laid upon the criminal judge.

Brigadier J. R. REES said that the Army had arrived at a fairly satisfactory formula for assessing responsibility. No man under trial might call in a psychiatrist for the defence; that was in the discretion of the convening officer of a court martial if any fact indicated that to do so was wise or necessary. Only about 5% of all offenders in the Army were seen by psychiatrists. Trial was dispensed with only for men who were so defective or psychotic that they had clearly been not responsible at the time they committed the offence and that proceedings could not be held. The Army psychiatrist was in the satisfactory position, by the use of a common form, of giving expert help to the court as its impartial adviser.

The Unconscious Motive in Culpability

Dr. H. CRICHTON-MILLER complained that Dr. East had not gone deep enough but had left the impression that the present system could be adapted to the needs of real justice. The whole concept of motivation had been transformed in the last few years, and the psychiatrist now had to deal with problems of culpability in the presence of unconscious motives which were perfectly clear to him but absolutely hidden from the public and the judiciary. He gave as an example a well-to-do woman shop-lifter who was incurably deaf, was developing a paranoid system, and had been thwarted in her desire for a son by the refusal of her husband to have any more children. She could have been helped, but the magistrate took the view that she ought to know better, and gave her a fairly severe sentence, which could not possibly have benefited her. The idea of temporary irresponsibility must imply the possibility of conduct that could not be treated in the ordinary way. Both psychiatrists and lawyers should clarify the difference between the deterrent and the educational elements in a sentence. He would have agreed with a magistrate who had said, when sentencing the shop-lifter, that he was obliged to do so for purposes of deterrence. Doctors must accept deterrent punishment for their patients, but wholly useless forms of punishment were to be deprecated. Mr. G. R. BLANCO WHITE, K.C., pointed out that the Army had no procedure appropriate for many mental cases, and only deterrent sentences could be given. Dr. W. H. SHEPLEY declared that the legal point of view over-valued consciousness and did not give due regard to the unconscious. Delinquents could not be improved except by a person whom they felt to be on their side and to understand them. Only such a person could begin to understand their motives, of which they themselves were largely unaware.

Lieut.-Col. J. E. W. PEARCE said that any major change in law or judicial procedure should be based upon systematic psychiatric studies of antisocial conduct, such as those provided for by the Criminal Justice Bill. To do something to reform an offender must be more useful for society than to put him away for the time being. It might well be contrary to the welfare of society that a persistent sexual offender should be at large, particularly during the early stages of his treatment. The psychiatrist's help began after guilt or innocence had been determined: he should be called upon for expert evidence to assist the court in passing sentence. Psychiatrists recognized that a sharp punishment at the very outset of the delinquent's career was very often efficacious. Punishment based merely upon expiation and retribution had been proved ill advised. For the protection of society punishment must be both deterrent and reformative. A small advisory committee should be set up to prevent waste of time in overlapping research into delinquency. Some of the arbitrary age limits—e.g., the presumption that a boy below 14 could not have carnal knowledge—should be swept away. Dr. ROWLAND HILL stressed the difficulty of distinguishing between a psychopath and a healthy person who had been brought up in an abnormal environment. Many habitual criminals had an abnormal childhood. The domiciliary service of supervision and control of antisocial people should be enormously extended, and the care committee might well have a large number of voluntary workers associated with it to relieve the pressure on the overworked probation officer.

Dr. NORWOOD EAST, in reply, warned against too rapid an introduction of deep explanations of crime, which might much offend the public and hamper the development of suitable methods. Doctors should study minor mental abnormalities more closely. The provisions of the Criminal Justice Bill would give a great impetus to the medical profession to help in the treatment and deterrence of crime.

Universities and Colleges

UNIVERSITY OF EDINBURGH

Brigadier F. A. E. Crew, M.D., D.Sc., F.R.S., has been appointed to succeed Prof. P. S. Lelean in the Bruce and John Usher chair of public health. He has held the Buchanan chair of animal genetics at Edinburgh since 1928 and was temporarily released from the duties of his professorship some two years ago for work in the Medical Department of the War Office.

UNIVERSITY OF GLASGOW

A series of meetings will be held in the Department of Ophthalmology on Wednesdays, from April 5 to May 10, at 8 p.m. The meetings are open to all medical practitioners and senior students interested in ophthalmology.

UNIVERSITY OF LEEDS

At a meeting of the Council of the University of Leeds on March 14 a part-time Lectureship in Public Health was instituted, and Dr. F. R. Dennison, honorary demonstrator in that subject, was appointed to the new post.

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—*Part I:* Audrey M. Ashcroft, N. L. Bailey, K. Baker, S. Beacon, D. T. Binns, R. Brearley, P. M. Bretland, Helen A. Cawson, A. D. Charnley, M. H. Clark, [1]N. Coulshed, S. Croft, G. D. Currie, Pauline M. Dean, Joan Evans, R. L. Goldson, H. G. Graham, [1]E. A. Harris, Ailsa M. Heath, Nellie Hughes, [1]F. G. Ince, R. W. Kennon, Barbara M. Killick, T. S. Law, Jean Learoyd, A. C. Levinson, H. S. Levy, T. R. Littler, [1]J. A. O'Garra, A. E. Pritchard, Rachael M. Rawcliffe, G. P. Reed, H. Roberts, W. G. Roberts, P. W. Robertson, F. W. Sheffield, H. H. Slack, Helen M. Taylor, L. Temkin, R. G. Thomas, Maureen M. Tickle, [1]L. F. Tinckler, J. Ward, Joyce Watson, [1]N. P. Watson, W. F. Wille, E. H. Wilson, [1]Esme M. Wren, Aline N. Wynroe. *Passed in Separate Subject:* Cécile N. Broster (Pharmacy and General Therapeutics). *Part II:* M. K. Alexander, J. T. D. Allen, E. T. Anderton, Beryl G. Anscombe, G. Ansell, K. W. Baruch, J. P. D. Bates, T. J. Boag, Edith M. Brown, D. Craddock, H. T. Davenport, B. Dover, [2]Monica Drinkel, E. D. Edmondson, J. L. Edmondson, J. W. L. Edwards, [2]R. Ellam, P. Foster, J. J. C. Frew, B. R. Frisby, [3]D. A. Gregson, L. Griffiths, B. B. Harrison, C. R. Helsby, G. Hughes, L. Jacobs, D. C. R. Jones, E. S. Jones, H. A. Jones, R. S. Jones, M. Kirwan, [2 3]W. T. W. Lawson, [2]Joyce R. Lewis, [3]J. B. Lynch, K. McCarthy, M. G. McEntegart, R. H. Martlew, [2]Lucille F. Morgan, [2]D. B. Mossman, C. M. Ogilvie, C. A. Pearson, H. H. Pilling, Muriel E. St. Pier, W. L. Sanders, [2 3]J. V. Shepheard, [2]Isabel S. Smellie, [3]G. W. Storey, P. J. Taylor, W. A. Thompson, Corris Venables, H. Wickham, J. R. E. Wilson. *Passed in Separate Subject:* S. Lipton (Public Health).

[1] Distinction in pharmacology and general therapeutics. [2] Distinction in forensic medicine and toxicology. [3] Distinction in public health.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The President, Sir Alfred Webb-Johnson, gave a luncheon on March 20 at the College in honour of Major-General Norman T. Kirk, Surgeon-General of the United States Army. Those present were: The United States Ambassador; Dr. E. A. Strecher, Consultant to the Secretary of War; Major-Gen. David N. W. Grant, Air Surgeon, U.S. Army Air Force; Major-Gen. Paul R. Hawley, Chief Surgeon, E.T.O., U.S. Army; Brig.-Gen. Malcolm C. Grow, Surgeon, U.S. Strategic Air Force; Col. Elliott C. Cutler, Chief Consultant in Surgery, E.T.O., U.S. Army; Col. James C. Kimbrough, Chief of Professional Service, E.T.O., U.S. Army; Col. Rex L. Diveley, Senior Consultant in Orthopaedic Surgery, E.T.O., U.S. Army; Col. Derrick T. Vail, Senior Consultant in Ophthalmology, E.T.O., U.S. Army; Col. Herbert Wright, Chief of Professional Services, U.S. Strategic Air Force; Surg. Vice-Adml. Sir Sheldon Dudley, Medical Director-General, Royal Navy; Lieut.-Gen. Sir Alexander Hood, Director-General, A.M.S.; Air Marshal Sir Harold Whittingham, Director-General, R.A.F.M.S.; Major-Gen. R. M. Luton, Director, Medical Service, Canadian Forces in England; and seventeen members of the Council of the College.

A series of Hunterian Lectures commencing on Wednesday, April 12, and a Thomas Vicary Lecture on Thursday, April 13, will be given at the College (Lincoln's Inn Fields, W.C.). All the lectures begin at 4 p.m. and are open to advanced students and medical practitioners.

COLLEGE OF PHYSICIANS AND SURGEONS OF BOMBAY

The Council of the College of Physicians and Surgeons of Bombay at its meeting in July, 1943, decided to institute an examination for a diploma in child health (D.C.H.Bom.) and appointed a committee to draw up regulations for that examination. The committee submitted its report to the Council on Jan. 14, 1944, and the report was approved and adopted. The course, which is of twelve months' duration, has to be taken at a recognized children's hospital or in a recognized children's department of a general hospital. The examination is open to persons holding a qualification (*a*) laid down in Schedules I and II of the Indian Medical Council Act, 1933, or (*b*) granted by any of the various Examining Boards in India whose names were on the Schedule of the Bombay Medical Council in 1941.

The Services

Capt. E. T. McCartney, R.A.M.C., has been awarded the M.C., and Major (temp. Lieut.-Col.) P. J. May, M.B.E., Capt. (temp. Major) C. B. Marsden, and Lieut. A. P. Binks, R.A.M.C., have been mentioned in dispatches in recognition of gallant and distinguished services in the field.

Capt. J. A. L. Naughton, R.A.M.C., has been awarded the M.C. in recognition of gallant and distinguished services in Italy.

Surg. Lieut.-Cmdr. E. S. McPhail, R.N.Z.N.V.R., has been mentioned in dispatches for outstanding courage, enterprise, and devotion to duty in H.M.N.Z.S. *Leander* in an action with Japanese Forces.

The following appointments, awards, and mentions in recognition of gallant and distinguished services in Sicily have been announced in the *London Gazette*:

C.B.E. (Military Division).—Col. (temp.) A. A. Eagger, O.B.E., R.A.M.C.

O.B.E. (Military Division).—Col. (temp.) C. Donald; Majors (temp. Lieut.-Cols.) P. Lloyd-Williams, T.D., F. O'Driscoll, W. A. Robinson, H. L. W. Sixsmith, M.B.E., W. L. Spencer-Cox, M.C., R.A.M.C.; Capt. (temp. Major) E. A. Jack, R.A.M.C.

M.B.E. (Military Division).—Capts. (temp. Majors) R. Bolton, L. F. W. Salmon, R.A.M.C.; Capt. H. K. Lucas, R.A.M.C.

M.C.—Capts. A. Noble and D. G. Sheffield, R.A.M.C.

Mentioned in Dispatches.—Brigs. (temp.) S. Arnott, D.S.O., R. R. G. Atkins, O.B.E., M.C., R. W. Galloway, C.B.E., D.S.O., E. Phillips, C.B.E., D.S.O., M.C., late R.A.M.C.; Cols. (temp.) W. M. Cameron, O.B.E., A. T. B. Dickson, O.B.E.; Major (temp. Lieut.-Col.) (Acting Col.) J. C. Gilroy; Majors (temp. Lieut.-Cols.) A. McC. Campbell, R. McI. Gordon, D.S.O., D.F.C., G.M., F. H. Hollingshead, R. G. M. Keeling, O.B.E., C. H. Kerr, D.S.O., M. C. Paterson, M.C.; Capts. (temp. Majors) J. W. L. Bain, L. Brill, G. C. Dansy-Browning, W. S. Harvey, F. C. Heatley, C. J. Longland, A. J. R. Lowdon, M. M. Medine, M.B.E., C. J. B. Murray, A. D. Wall; Capt. (Acting Major) R. W. Jones; Capts. A. Green, D. C. Little, I. B. MacKay, B. C. M. Palmer, R. Paul, D. R. Sandison, A. L. Thorp (died of wounds), R.A.M.C.; Major (temp. Lieut.-Col.) J. Morgan, O.B.E., I.M.S.

CASUALTIES IN THE MEDICAL SERVICES

Acting Wing Cmdr. DONALD SCRIMGEOUR BATEMAN was killed in a flying accident over-seas on March 14, aged 40. He studied medicine at Oxford University and St. Thomas's Hospital, qualified in 1930, and took the M.B., B.Ch. degrees in 1936. He obtained the Diploma in Child Health in 1935 and the M.R.C.P. in 1937. He was appointed to the Medical Branch, R.A.F.V.R., on April 18, 1939, and was called up for service at the outbreak of war. At the time of his death he was physician in charge of the medical division of an R.A.F. hospital over-seas.

Acting Squad. Ldr. HUGH FERGUSON DAVIDSON WHITELAW died on March 15 at the age of 34. He studied medicine in Glasgow and took the Scottish Triple Qualification in 1934. He entered general practice in 1935 and was appointed to a commission in the Medical Branch, R.A.F.V.R., on Jan. 7, 1941. At the time of his death he was medical officer at an R.A.F. Wing Headquarters at home.

Acting Squad. Ldr. EDWARD TUDOR OWEN died on March 17 while on active service over-seas, aged 34. He studied medicine at Liverpool, graduated M.B., Ch.B. of the university in 1933, and obtained the F.R.C.S.Ed. in 1941. He held surgical appointments at various hospitals in the Liverpool and Manchester areas and received a commission in the Medical Branch, R.A.F.V.R., on Oct. 8, 1942. At the time of his death he was serving with a mobile field hospital over-seas.

Wounded.—War Subs. Capts. B. P. Armstrong and C. M. Boucher, and Lieut.-Col. J. N. Groves, R.A.M.C.; Wing Cmdr. T. D. L. Bolan and Acting Wing Cmdr. C. R. Jenkins, R.A.F.

Killed.—War Subs. Capt. J. J. Docherty, R.A.M.C.

Killed on active service in Burma.—Capt. H. Lauder, R.A.M.C.

Previously reported missing, now presumed lost at sea.—Lieut. N. Jolly, R.A.M.C.

Died.—War Subs. Capts. J. S. G. A. Burns and J. Sheehan, R.A.M.C., Capt. H. Mullen, R.A.M.C.

Prisoner of war.—Lieut. R. L. G. Dawson, R.A.M.C.

DEATHS IN THE SERVICES

Col. GEORGE HUTCHESON, I.M.S. (ret.), died on March 14 at Douglas, Isle of Man. His father, George Hutcheson, had entered the Indian Medical Service in 1873 and had written on cholera. George Hutcheson, jun., was born in India on Dec. 17, 1874, and educated at the Brighton and Epsom College and the London Hos-

pital. He passed both the Conjoint Board and the London University final medical examinations in 1897 and 1898 and entered the I.M.S. in the latter year. He saw active service in China in 1900 and received the medal. On entering the civil branch he joined the jail department and held charge of various large central jails; the work of these includes administrative as well as medical charge. He was promoted to the rank of major in 1910 and of lieut.-col. in 1918. In 1927 he was selected for the administrative grade and was appointed to be Inspector-General of Civil Hospitals and of Prisons, Assam; he retired on completion of his term in that post. He joined the British Medical Association in 1908.

Medical Notes in Parliament

National Health Service Debate in the Lords

When the debate on the White Paper was resumed in the House of Lords on March 21, Lord HORDER said he believed that the Government's intentions were honourable, but good intentions were not enough when the question at issue was such an expert one as that of not only maintaining but increasing the national health services. Careful analysis of the White Paper did not convince him that the knowledge and experience that we actually possessed in these matters had been fully utilized in framing the Government's scheme. If the White Paper was only a tentative expression of the Government's ideas of how a national health service might be run and was open to modification after further discussion with those who actually ran these services to-day, his own fears were to a large extent allayed; but if the White Paper as it stood was to be made the basis of an Act of Parliament, discussion being subsequent and not prior to the drafting, certain principles and institutions of paramount importance to the efficiency of our health services were likely to be lost to us. The White Paper posed an administrative structure which threatened the very existence of two of the institutions in British medicine which both past and present experience showed to be vital—the private practitioner and the voluntary hospitals. It was true that it said that both of these institutions were to be allowed to remain, but their continued recognition was not definitely encouraged. It was permissive, and they must fight for their survival.

The attitude of the White Paper towards the man who wanted to continue private practice and yet avail himself of the manifest advantages to his patient that this new scheme offered was too colourless, if not actually negative. Almost it read as though some patients preferred to be doctored privately, and so, as this was still a free country, their whim was to be indulged, for a while, anyway. It was very much the same in regard to the voluntary hospitals. It was certainly not the wish of the Government, the White Paper said, to destroy or diminish a system so well rooted in the good will of its supporters. But this expression of a mere desire for co-operation, this permission to continue to exist, demonstrated a great lack of appreciation of the intrinsic value for the nation of an institution in which there had resided for hundreds of years, and still resided, the best that British medicine held in respect of both its science and its art. The White Paper dismissed medical research in a few lines. It said that it had been the policy of the Medical Research Council to encourage research work in the hospitals and to assist it financially. He agreed that that was a good policy, as against the alternative one of setting up super-State institutions for this purpose.

The voluntary hospitals should have not only permission to exist but positive encouragement and a guarantee of financial security. He shared the anxiety of those who, while recognizing that the Government scheme did not kill the voluntary hospitals, feared that it might quickly starve them into inanition. The Minister of Health said he could not believe that the anxiety shown was really justified. If so, then it was a duty laid upon the Minister to allay this anxiety, because the expression of it had been very real and very general throughout the country. He did not think anyone could say what might be the ultimate type of hospital service in this country, how controlled, how administered, how financed. But most doctors believed it essential to maintain the voluntary hospitals pending the proposed development in the hospital service, whether the view was short or long. Most of them believed that it was not in the best interests of the health of the nation that the medical profession should be a branch of the Civil Service. But what the public believed was more important than what doctors believed. The Government should take some steps to enlighten the public on the real implications of the White Paper before an Act of Parliament was framed in relation to it. If this were done, public opinion would take much the same view as the doctors. Some of them felt, not that there was too much of the spirit of democracy in the White Paper, but that there was not enough democracy in it. The White Paper smelt too much of bureaucracy.

The Central Authorities

The principle of professional and vocational guidance appeared to be traversed, in the suggested administrative machinery, at the centre and at the periphery. The Central Health Services Council was not appointed by the profession nor by professional organizations. It had no executive power, and, presumably, might not publish its reports. The Central Medical Board had executive power, but here again nomination was by the Minister and not by professional organizations. In the case of hospitals the anomaly called for special consideration. He was very doubtful if in this case anything short of an *ad hoc* hospitals board would resolve the conflict that would undoubtedly face the Minister. Such a board should certainly be set up. Care should be taken to see that the areas chosen for the hospitals and allied services should be large enough to embrace all types of hospital and clinic in close liaison, working always upwards to a key hospital, which should be, whenever possible, a teaching hospital of university status.

He confessed to some surprise when he read the Minister of Health's comment on the cottage hospitals—namely, that the old conception of the local hospital was outworn. He awaited with interest the comments of the admirable boards who ran these splendid institutions. He was convinced that, given proper vocational representation on the controlling and administrative bodies, both central and local, the development of Health Centres would bring about that availability of our health services which was the essence of the problem. In those Health Centres the Government could nourish that spirit of adventure and enterprise which lay at the heart of British medicine, and which the shadow of some parts of the White Paper threatened to obscure. Ministers and the accredited representatives of medicine, by coming together, could make satisfactory adjustments in this suggested scheme. He wished that medicine could offer the Government what he and some of his friends dreamt of but had not so far realized—an Academy of Medicine in this country for these deliberations, a body which would be authoritative, representative, and judicial. But, failing that, there were bodies with which the Government had already made contact, bodies animated by good will and by a desire to do the best in this matter for the people of this country.

Lord GEDDES said it was true that social security did make being ill a gainful occupation, and it was probable that a certain number of people might like to continue in that easy occupation of making an income on the flat of their backs in bed. Therefore there had to be certification by medical people. There was no elaboration in the White Paper of how the consultant service was to be trained and developed, and not very much about how it was to be administered; but one thing was clear, and that was that it was to be administered by, and under the control of, the hospitals and the local authorities concerned. That was an extraordinary position. The general practitioners would be under the control of the Central Medical Board, which was, as he read it, a mainly bureaucratic body controlled by the civil servants of the Ministry of Health acting in the name of the Minister. They were to lay down the conditions of certification as to whether those who thought themselves sick were to be allowed to continue in the gainful occupation of being sick. The general practitioners would have a contract in which were stated the conditions on which they were to certify.

A Medical Gestapo

There must be certification for any security plan and a medical inspectorate, and if that did not degenerate before very long into something not very dissimilar from a "medical Gestapo" he did not know the way the Civil Service of this country worked. What would happen was that they would have this continual supervision of every person who, on medical grounds, was a beneficiary under this plan. There was no way of escaping that. If they were going to have a security plan with medical benefit on a great scale there must be certification. If it was to be safe, there must be some way for the wage-earners who were caught by the certification to get to independent medical opinion. Therefore he was profoundly disquieted by the suggestion in the White Paper that everybody was to be insured. In the interests of them all there should be an uninsured class of people in the country—obviously in the upper income limit—and they would, of course, pay for the real health service, not this health service through taxes and rates. If they were not insured they would be adequate to maintain a strong body of independent leaders of the medical profession, to whom appeal could be made from decisions of the doctors controlled by the Central Medical Board. That there should be such an independent group of doctors was of the greatest possible importance. The Government should look at that point again, because this

document was based upon the idea of treatment of ill-health. It must necessarily increase the vested interest in ill-health, because it was raising the amount of money spent on dealing with it.

Medicine was a continually growing science and art, changing year by year under the influence of the great teaching hospitals. They must do their best to keep in the van of medical knowledge, medical research, and medical teaching. That meant that the great teaching hospitals—which would be, which must be, in any complete scheme of hospital organization the key hospitals of great regions—must be governed by bodies of men who understood fully what medical research, medical science, and medical teaching meant.

Lord BALFOUR OF BURLEIGH said he was assured that more than 1,000,000 people in this country, drawn from all classes of society, relied upon homoeopathic treatment. He did not fully grasp how the homoeopaths were satisfactorily to be fitted into this scheme.

"Power of Direction"

Lord WOOLTON, who replied, said that there was no doubt in the mind of the Government about the value of scientific research in general and medical research in particular. He would have a conversation with the responsible Minister with regard to the homoeopaths. The Government had tried, in the development of this scheme, not to destroy but to build up from what they had a new system that would grow out of the old. The concern of Lord Moran and Lord Horder about the Government's relation to the Central Health Services Council and what the Government was going to do with the profession was unnecessary. The Government was most anxious to co-operate in every sort of way with the medical profession, to consult them, and to do everything with them—except one thing. Ministers were determined that they would take the responsibility for their actions, and they were not going to put that responsibility on to a medical board. There was no insincerity in the White Paper. When the Government said, therefore, that it was going to have a "medical council" it was not something merely put up as a screen; it was a deliberate effort to get the best of medical opinion to advise Ministers. The Government did not say, "Here is the legislation; you can take it or leave it." The profession would be consulted throughout before legislation was brought in.

The White Paper contained no proposal in any way analogous to the power of direction at present exercised by the Government under the National Service Acts. The true position was this: there was an assumption by the community as a whole of the responsibility for guaranteeing to every member of it the services of a family doctor. That was what the Government was guaranteeing, and that involved new duties with regard to the distribution of medical practice. The Government must do what it could, without regimentation of the profession, to see that every area had enough doctors to meet the needs of the patients, which was not always the present position. Two proposals were therefore made in the White Paper for methods to be used by the Central Medical Board for this purpose. The first was that the board should be able to say that a particular area already had enough doctors to carry on the public service, and that no newcomers into the public service should be allowed in that area. How restricted this power was and how little it resembled direction, even of a negative kind, was clear from the fact that it did not apply to private practice. Any doctor would be at liberty to practise privately wherever he liked and at any time he liked. Moreover, it applied only to newcomers to an area and did not in any way disturb or affect the doctors already practising there, and it did not involve directing any doctor to go anywhere. It merely restricted the range of his choice of the area in which he would take up practice in the public service. When a young man wished to enter a public service where he would be paid out of public funds, it was not a very hard condition that he should be told where there was a vacancy and where the State was prepared to pay him to do his work. There had been misunderstanding on this point.

The Government did not want the voluntary hospitals to pass. It had deliberately stated that the sum total of the cost of this National Health Service would not be met by rates and taxes or by contributions under the insurance scheme—that all those put together would not be enough to maintain all the hospital services and all the other services that would be required. Therefore it would be necessary for the voluntary hospitals to continue. There was no reason to be fearful on this question. Both by word and deed the Government would do whatever it could to maintain the existence of the hospitals in full vigour.

The Government was anxious to develop a consultative service for the whole community. Before legislation it would enter into the fullest discussion with reference to the position of consultants and the training of consultants. There was in this country a great medical and hospital service, but the thing the Government had in mind was a programme of positive health for the people. Through this legislation the country would benefit immeasurably, and he hoped that Lord Moran would come in on to the Government side and not divide the House on this question.

Lord MORAN withdrew his amendment, and the motion welcoming the Government's proposals was agreed to.

Rehabilitation in the Air Force

In the House of Commons on Feb. 29 Sir ARCHIBALD SINCLAIR made a statement on the Air Estimates. Referring to the accident rate he said that though statistics showed that it was declining they were not satisfied.

Every accident represented a lamentable waste, certainly of labour and materials and perhaps of precious life and skill. Moreover, as our aircraft became larger, more lives were risked every time an accident happened. It was our duty to see that each member of a crew, whose lives might depend on any one of their number, was as skilled, practised, and swift in thought and action as training could make him. Another source of wastage which had been reduced was sickness. Though more of our units were serving over-seas, often in unhealthy areas and under active war conditions, we had had, during the last 12 months, fewer sick than at any time since the outbreak of war. That certainly meant much in avoidance of pain and suffering; but it also meant the addition of several thousand men and women to our resources. The R.A.F. owed a great debt to the medical profession, both to those members of it whose career lay in the R.A.F. Medical Branch and to the many doctors and surgeons who had joined it since the war started.

Remarkable strides had been made in the rehabilitation of men suffering from burns, severe wounds, and accidents. The rehabilitation centres worked on the principle that it was not enough that a broken limb or a torn ligament or burnt fingers should be mended if the patient was nevertheless to limp or lose part of his skill of hand for the rest of his days. Members knew the tragedy of industrial cases and the fear that haunted the patient that he would never get back to full work again, and they would be glad to hear that over 80% of the patients in the centres had been able to get back to full duties in a shorter time than a few years ago we should have believed possible. So, under the wise and vigorous leadership of Air Marshal Sir Harold Whittingham, the Director-General of Medical Services, doctors and dentists contrived not only to heal but to prevent sickness, and thus strengthen the R.A.F. for battle.

Royal Commission on Population

Mr. CHURCHILL announced on March 2 that Mr. Willink had appointed three committees to assist the Royal Commission on Population respectively on the statistical, the economic, and the biological and medical aspects of the inquiry. The secretary of the Royal Commission itself and of the three committees was Mr. N. F. McNicoll of the Ministry of Health. The terms of reference of the Commission were:

To examine the facts relating to the present population trends in Great Britain; to investigate the causes of these trends and to consider their probable consequences; to consider what measures, if any, should be taken in the national interest to influence the future trend of population; and to make recommendations.

The medical members of the Commission are Prof. A. W. M. Ellis, who is chairman of the Biological and Medical Committee, and Dr. Ethel Cassie.

The terms of reference of the Biological and Medical Committee are: To formulate for the assistance of the Royal Commission on Population the biological and medical factors relevant to the Commission's inquiry and generally to advise the Commission on the biological and medical aspects of the inquiry. The members of this committee in addition to Prof. Ellis are Prof. E. D. Adrian, Prof. D. Baird, Dr. P. M. F. Bishop, Dr. C. P. Blacker, Mr. Eardley Holland, Dame Louise McIlroy, Dr. A. S. Parkes, Mr. E. W. Riches, Sir Alexander Russell, Dr. Percy Stocks, and Dr. J. G. Thwaites.

Army Medical Services

Replying on March 2 to the debate on the Army Estimates, Mr. ARTHUR HENDERSON said the Army Medical Service, including the Army Dental Service and Queen Alexandra's Imperial Military Nursing Service, had been strained owing to shortage of doctors. The Army Medical Service had accepted as an additional responsibility the care of Yugoslav wounded. The doctors available were insufficient to meet the needs of the fighting Services and of the civil population. Medical personnel were in many instances unavoidably overworked. They had accepted this cheerfully and with zeal and efficiency, had

surmounted all difficulties, and produced excellent results. Every effort was made to replace medical officers, where possible, by non-medical officers, R.A.M.C., in appointments which could reasonably be filled by persons who lacked medical qualifications. The Army had cut down its demands for doctors to the minimum, but the minimum was unlikely to be supplied. The Army Council would be able to meet the demands of the Forces engaged in future on active operations, but the Army at home would not receive the same high standard of medical service which it had in the past. Every endeavour would be made to see the sick were well cared for and did not suffer. There were bound to be delays and imperfections in medical boards, specialist examinations, the answering of complaints, and other administrative activities which were not matters of life and death. These must be accepted.

Rescue Ships of the Navy

In introducing the Navy Estimates in the House of Commons on March 7, Mr. A. V. ALEXANDER referred to the reduction in the loss of shipping tonnage. He said that this reduction had been reflected in the Merchant Navy casualties, and that in 1943 the number of officers and men lost was roughly only half of that in 1942. The Admiralty, in consultation with the Ministry of War Transport, had been able to increase substantially the number of the special rescue ships which were sailed with convoys now for the sole purpose of rescuing survivors and giving medical attention. Each carried a naval doctor and a hospital staff, and they were now an integral part of the convoy system. There had been many reports from the naval escorts praising the high standard of seamanship and efficiency of the masters, officers, and crews of these vessels, which had been operated with magnificent courage.

Antibacterial Cream for Burns

In reply to Mr. Kirkwood on March 14 Mr. JOHNSTON said he was informed that Prof. Todd and his assistants at the Royal Technical College, Glasgow, in collaboration with the Glasgow Royal Infirmary, had produced a formula for a cream for use as a skin disinfectant and as a first-aid treatment for burns. Claims recently made for this preparation in the Press went further than those responsible for the formula would desire, but Prof. Todd and his staff had performed a valuable public service in evolving this exceedingly helpful formula. It was described in the *British Medical Journal* for March 4 in a letter from Dr. Leonard Colebrook, who was sent to Glasgow by the Medical Research Council to undertake investigations.

Venereal Diseases

Mr. GRAHAM WHITE on March 16 inquired whether the Minister of Health was satisfied with the progress made in dealing with venereal diseases under Regulation 33B, and if he would take further measures to prevent this evil from spreading. Mr. WILLINK said that in his view Regulation 33B had been of considerable help to local authorities in tracing and securing treatment of persons who did not voluntarily seek and undertake it. The Regulation was not designed to do more than deal with a comparatively small class of infected persons who had always been a special problem. He had under special consideration what further effective measures could be taken to deal with these diseases, but was not yet in a position to make a statement.

In answer to Mr. Sorensen on March 14 Sir JAMES GRIGG said that in the years 1940 to 1943 inclusive there were in this country on the average just under 11 fresh cases a year of venereal disease per 1,000 troops. The average figure for 1915 to 1918 inclusive was 29½ per 1,000, but these figures included relapses as well as fresh cases. They were not, therefore, strictly comparable with the present figures, but showed that there had been a substantial decrease. Of men discharged from the Army on medical grounds, 3 per 1,000 were discharged on account of venereal disease. Every method in the way of education, provision of recreation, prophylaxis, and treatment was being actively investigated with a view to decreasing wastage from these essentially preventable diseases.

Examination of the Eyes of School-children

Mr. BUTLER said on March 16 that in 1938 the number of ophthalmic surgeons employed by local education authorities in the school medical service was 418. Comparable figures for the war years were not available, but he had no reason to think that the number had fallen materially. School medical officers and assistant school medical officers employed by local education authorities on eye work in 1938 numbered 226. The records did not show how many of them had specialist qualifications. Before the Board approved the employment of a school medical officer on eye work they satisfied themselves that he had adequate qualifications and experience.

Functions of Ministry of Health

Asked on March 16 to reduce the field of activity of the Ministry of Health to enable the Department to deal with matters of prior importance, Mr. CHURCHILL said that proposals which the Government would shortly make in regard to social insurance would involve reconsideration of the responsibilities of several Departments, including the Ministry of Health. Apart from this and the possibility of minor adjustments in departmental boundaries, he was satisfied that the functions of the Ministry of Health covered a well-defined and manageable field of action.

Diphtheria Immunization

On March 21 Mr. WILLINK, replying to Mr. Alfred Edwards, said that the number of cases in England and Wales in which it had come to his notice that death had taken place shortly after immunization by toxoid against diphtheria was two. It was estimated that about five million children had been given protection by this means in the last few years. The number of reported cases in which "nervous trouble" had been noted some time after immunization was 16. The relationship between the nervous trouble and the process of immunization had not been established. Whenever practicable, inquiries were made by medical officers about such cases.

Malaria Research Institute.—On March 1 Major LYONS asked whether the Secretary of State for the Colonies would, as an economy effort, establish a malaria research and survey institute for the Central African Colonies, on the lines of the one in India, to be financed by the Colonial Research Fund, or one each for West and East Africa respectively. Mr. EMRYS-EVANS said that research on malaria was being actively carried out at present so far as circumstances permitted. Much work on malaria control had been done and was being done both in East and in West Africa. The general organization of medical research in the Colonial Empire, which would include the most suitable means for investigating the problems of malaria and its control, was at present under consideration by the Colonial Research Committee.

Allowances for Tuberculous Persons.—Answering Mr. Graham White on March 2, Mr. WILLINK said arrangements for the payment of treatment allowances in cases of tuberculosis had been made by all county councils and all county borough councils. Special arrangements for meeting the cost of these allowances from the Exchequer were introduced as a wartime measure on the ground of the importance, from the point of view of the war effort, of dealing with certain cases of this disease. Where this consideration did not apply the question of amending existing provision for maintenance was being considered as part of the arrangements for social insurance.

Women Medical Students' Accommodation.—On March 7 Sir E. GRAHAM-LITTLE asked the Minister of Health whether he was aware that the Senate of London University desired to extend facilities in its medical schools for women students, but that one of the principal obstacles thereto was the inadequacy of the accommodation for men and women in the university's medical schools, which now trained nearly half the doctors of this country; and whether he would give particular attention to this position in framing his future estimates. Mr. WILLINK replied that he was aware of the resolution on the subject of the training of women medical students recently passed by the Senate of London University, and he understood that a copy of it was being sent to the Committee on Medical Schools, under the chairmanship of Sir William Goodenough. The assistance likely to be needed by medical schools in the future was one of the questions under review by that committee.

Treatment by Unregistered Practitioners.—On March 21 Mr. ALFRED EDWARDS asked the Minister of Health whether, when proposals for a national health service were drawn up, consideration was given to the fact that a number of people were treated by unregistered practitioners; and what was the outcome of such consideration. Mr. WILLINK replied that there was nothing in the proposals advanced by the Government which would prevent those who preferred to do so from seeking treatment from unregistered practitioners. The service itself, however, must clearly be based on registered medical practice in the form in which that had so far been approved by Parliament.

Infant Mortality Inquiry.—On March 21 Mr. JOHNSTON informed Major Markham that he had asked the Scientific Advisory Committee "to consider the factors specially responsible for that part of infant mortality attributable to infections, with particular reference to the first month of life, and to suggest means for reducing mortality from this cause." The personnel making this inquiry and the manner in which it should be conducted were for the committee to decide, but he had no doubt that all relevant information, including experience and developments elsewhere, would be carefully weighed.

Notes in Brief

In 1943 2,443 other ranks, who were in Category A1 on enlistment, were subsequently boarded out of the Army after serving for less than six months.

The amount of the grant-in-aid for the work of the Medical Research Council is £215,000 in the current financial year. The proposal to be submitted in the estimates for 1944–5 is for a grant of £250,000.

No. 10

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 11.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944 (a)	1944 (b)	1944 (c)	1944 (d)	1944 (e)	1943 (Corresponding Week) (a)	1943 (b)	1943 (c)	1943 (d)	1943 (e)
Cerebrospinal fever	90	7	31	5	3	86	7	31	1	4
Deaths		—	2				1	1		
Diphtheria	624	29	143	97	38	794	36	199	99	34
Deaths	12	—	3	2	—	24	—	4	3	—
Dysentery	208	23	75	2	3	78	8	41	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	—	1	—	2	—	—	—	—
Deaths		2					—			
Erysipelas			53	8	8			47	10	3
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				6					13	
Deaths	35	5	15	13	1	57	9	9	17	4
Measles	2,098	244	306	414	3	19,799	1,364	529	11	93
Deaths	2	—	2	6	—	20	1	1	—	1
Ophthalmia neonatorum	84	4	22	1	1	88	5	26	—	—
Deaths										
Paratyphoid fever	3	—	—	1 (B)	1 (B)	4	—	—	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal*	1,178	62	9	16	7	1,315	90	23	2	13
Deaths (from influenza)	42	5	3	1	—	69	7	7	4	3
Pneumonia, primary			355	32				428	30	
Deaths		71		26	9		63		20	12
Polio-encephalitis, acute	2	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	3	—	1	—	—	5	—	—	3	—
Deaths		—					—			
Puerperal fever		1	10		—		1	15		—
Deaths										
Puerperal pyrexia†	173	4	11	1	3	160	12	14	2	1
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	2,215	141	256	31	127	1,907	126	309	55	46
Deaths	—	—	—	—	—	1	—	—	—	—
Smallpox	2	1	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	—	—	1	9	2	4	1	4	5	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough	1,906	178	142	37	22	1,864	138	214	88	24
Deaths	8	1	—	3	—	18	7	2	1	—
Deaths (0–1 year)	410	45	84	52	14	438	57	94	56	30
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,738	931	796	288	154	5,053	800	682	239	158
Annual death rate (per 1,000 persons living)			18·3	18·8	‡			15·4	15·7	‡
Live births	7,320	938	989	326	290	6,369	741	934	375	294
Annual rate per 1,000 persons living			20·1	21·3	‡			19·1	24·7	‡
Stillbirths	256	30	40			241	21	32		
Rate per 1,000 total births (including stillborn)			39					33		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes puerperal fever for England and Wales and Eire.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week the total cases of scarlet fever exceeded those of the previous week by 218. Acute pneumonia showed a similar increase of 195, measles of 111, and cerebrospinal fever of 37, while there were 57 fewer cases of diphtheria, and 10 fewer of dysentery.

A small rise in scarlet fever was general throughout the country, but particularly marked in Yorks West Riding and Nottinghamshire, where the totals were respectively 36 and 35 more than last week. The incidence of measles fluctuated within the counties: Kent's total was 117 higher than last week, Norfolk's 67, and Wiltshire's 60; and Gloucestershire's total dropped by 74, and Lancashire's by 51. The rise in pneumonia was most rapid in the counties of the west midland region, where there were 80 cases in excess of last week's total.

The notifications of dysentery, 208, remained at a high level. No new outbreak of any size was reported, and the largest returns were those of Surrey 27, Lancashire 26, London 23, Yorks West Riding 20, Middlesex 19, Sussex 10.

In *Scotland* an increased prevalence was recorded for measles with a total 88 higher than last week, acute primary pneumonia with a total 73 higher, whooping-cough with a total 39 higher, and scarlet fever with a total 33 higher, while the notifications of diphtheria fell by 33. In Glasgow the total notifications of measles rose by 100 cases, and those of pneumonia by 20; 20 of the 31 cases of cerebrospinal fever were recorded in this city. The largest returns of dysentery were Glasgow 12, Falkirk 11, and Edinburgh 10.

In *Eire* notifications of measles and diphtheria fell slightly. In Dublin C.B. the incidence of measles was down by 49, but it rose by 38 in the rest of the country.

In *Northern Ireland* the incidence of scarlet fever rose to a total of 50 more than last week. The notifications in Belfast C.B. rose from 42 to 72

Smallpox

A further case of smallpox has been reported from Mount Vernon Emergency Hospital, Middlesex, making the total 12. A case of smallpox having occurred in Yorks West Riding, Pudsey M.B., the medical officer has decided that chicken-pox shall be a notifiable disease for one month.

Week Ending March 18

The notifications of infectious diseases in England and Wales during the week included: smallpox 3, scarlet fever 2,395, whooping-cough 2,026, diphtheria 685, measles 2,226, acute pneumonia 1,284, cerebrospinal fever 87, dysentery 269, paratyphoid 5, typhoid 6. In the great towns there were 51 deaths from influenza.

Points from Abroad

Siegmund (*Klin. Wschr.*, 1943, **22**, 763) observes that the disease process in epidemic hepatitis is based on that of an acute diffuse hepatopathy, associated with disturbed capillary circulation, altered permeability of the capillary walls, and consequent changes in the mesenchymatous and parenchymatous parts of the lobule. At an early stage the capillary walls are "loosened," the capillary membranes stretch, and the cells in the walls increase in size and number and often show lysis. The liver cells also soon become enlarged and show cloudy swelling. Holler says that the two common signs are diarrhoea and jaundice. In his opinion epidemic hepatitis is to be classified with those infections with a monocytic reaction. Beiglbock states that in epidemic hepatitis swellings of the lymph glands and enlargement of the liver and spleen are common. Jaundice is not a constant symptom. Histologically the picture is of a striking reaction of reticulo-endothelium and connective-tissue apparatus, accompanied by more or less comprehensive injury of the liver cells. In severe cases this may be accompanied by an increased capillary permeability. Transition into subacute liver atrophy on the one hand and into cirrhosis on the other hand occurs.

According to Vetter (*Klin. Wschr.*, 1943, **22**, 767), since 1938 there has been observed in Germany a new inflammatory disease of the conjunctiva and cornea which has assumed epidemic proportions hitherto unknown. Its course is divided into the stage of acute conjunctivitis and that of nummular keratitis. A typical sign in the first stage which is important for diagnosis is the palpable and often visible swelling of the regional (auricular and submental) lymphatic glands. The nummular foci present in the second stage, and always separated from each other by normal corneal tissue, can, however, also develop into confluent surface infiltrations which can very easily lead to desquamation of the epithelium, thus producing severe ulcer similar to ulcus corneae serpens. As a result of the formation of scars, visual disturbances often remain. In contrast to earlier observations, the disease also attacks children under 12 years, even 2-year-old infants.

Medical News

Dr. Charles Hill will speak on the White Paper at a meeting of the Yorkshire Branch of the B.M.A. to be held on Sunday, April 2, at 2.30 p.m. at Philosophical Hall, Park Row, Leeds.

A meeting will be held on Wednesday, April 5, at 4.30 p.m. at Manson House, 26, Portland Place, London, W.1, to which all medical practitioners in St. Marylebone have been invited, to discuss by question and answer the implications of the White Paper. At least one prospective Parliamentary candidate and a Member of Parliament will be present, and Mr. W. McAdam Eccles will preside.

The British Council has for disposal several copies of each of the following publications: *Biological Surgery in Tuberculosis* (1942), *Biological Surgery in Bone-tuberculosis Patients* (1941), and *Lung Puncture as a Biological Treatment of Divers Localizations of Tuberculosis* (1942), all three by C. Robertson-Lavalle; also *Adecuación al Trabajo* (1943), by H. J. A. Rimoldi. Copies of any of the above will be sent gratis to practitioners, libraries, institutions, etc., on application to the Medical Department, British Council, 3, Hanover Street, W.1.

The Institute for the Scientific Treatment of Delinquency announces a course of twelve lectures on criminal law and administration, to be given by Mr. A. L. C. Morrison on Saturdays at 2.30 p.m., beginning April 15, at 17, Manchester Square, W.1. The fee for the course is £1, single lectures 2s. There will be no lecture on May 13 or May 27. Ten lectures on the historical background and present position of psychology are to be given by Prof. J. C. Flugel on Sundays at 5.30 p.m., beginning May 21. Fee for the course 17s. 6d., single lectures (only if seats are available) 2s. Further particulars may be had from the general secretary at the above address.

A series of "health weeks" have been held in all the factories in the Rootes group of companies, and the last will begin on April 24. Sir William Rootes, who takes a great interest in the welfare of the 40,000 people in the factories he controls, has inaugurated these with the object of reducing the amount of time lost through avoidable illness and to educate the worker in preventive medicine. The daily programme of events takes place in each factory canteen at lunch-time and during the night-shift break, and includes films and talks on a number of medical subjects; also demonstrations on the preparation of nutritious and palatable food. A special feature of the health weeks is an all-medical "brains trust."

Dr. John R. Williams contributes to the February number of the *Canadian Medical Association Journal* an account of the launching of the s.s. *Frederick Banting* at the Bethlehem-Fairfield Shipyard in Baltimore, Maryland. The ship, a Liberty, is 500 feet long and displaces 10,000 tons. Among those attending the ceremony from Toronto were President Cody of the University, Lady Banting, and Dr. Charles H. Best, and among those representing the Canadian Government was Ambassador Leighton McCarthy. The ship was christened in the traditional manner by Lady Banting, who said afterwards that of all the honours that had been conferred upon her husband she was sure this would touch him most. She presented a portrait of her husband to be placed in the cabin of the ship, and Dr. Best spoke feelingly of his association with Sir Frederick Banting. Mr. Bouslog said that in view of its broad implications of international good will, the U.S. Maritime Commission, which he represented at the launching, had decided to present the s.s. *Frederick Banting* to the British Government.

The Medical Consultative Committee appointed to act for the associated village settlements of Papworth and Enham, of which the hon. medical director, Group Captain R. R. Trail, M.D., is chairman, has set up a research committee to advise on the direction of medical research work at these settlements and to co-ordinate this work with other research investigations on tuberculosis in this country. The following have accepted invitations to serve on this committee: Sir Arthur S. MacNalty (chairman), Sir Joseph Barcroft, Prof. S. P. Bedson, Dr. F. R. G. Heaf, Sir John Ledingham, Prof. W. H. Tytler, Prof. O. L. V. de Wesselow.

The Central Council for Health Education intends holding two summer schools during 1944. One will take place at Whitelands College, Bede College, Durham, from July 24 to Aug. 3, and the other at Chelsea Polytechnic, London, from Aug. 9 to 19. The programme will cover all aspects of health education (including sex education) and should be of value to teachers, youth leaders, educational and medical administrators, nurses and health visitors, social and industrial welfare workers, etc. Many applicants had to be rejected from the 1943 school owing to lack of accommodation. Those wishing to receive early notification of the forthcoming schools should send their name and address on a postcard to Mr. Cyril Bibby, Central Council for Health Education, Tavistock House, Tavistock Square, W.C.1.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

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ANY QUESTIONS?

Protection against X Rays

Q.—*Some people do x-ray work without adequate personal protection. What should the latter consist of, when screening or taking films?*

A.—The first care of every practitioner approaching radiography and screening with unfamiliar apparatus is to familiarize himself with the normal functioning of the set for screening and radiography. In using it he must be prepared to accept the responsibility for the welfare of his patients and his technical assistants as well as for himself. Should trouble arise his work may be assessed on this presumption—that he has specialist training and experience.

Manufacturers and designers of *x*-ray apparatus have before them the National Physical Laboratory standard of protection, which guides them in securing a recognized standard of tube and apparatus safeguards, but the use of unorthodox technique and home-made modifications of the set may introduce grave dangers. It is therefore wise to put to oneself the following questions: Is the set of N.P.L. standard? Am I using correct technique and the set in the manner for which it was designed? Where any doubt exists as to the safety of the general working conditions the N.P.L. will, for an appropriate fee, carry out the necessary investigations. Special films can be obtained from the N.P.L., and these films can be worn on the person for the appropriate period and returned to the N.P.L.; from them can be ascertained the radiation exposure received in the area on which the film was worn.

The British *X*-ray and Radium Protection Committee was formed in 1921 for the express purpose of preparing recommendations to arrest the sequence of casualties to *x*-ray and radium workers; the sixth revised report (Feb., 1943) is readily available in printed booklet form, and can be obtained on application to the General Secretary, British Institute of Radiology, 32, Welbeck Street, London, W.1. All who use *x* rays or radium should be familiar with the contents of these recommendations.

A few general practical observations may not be out of place. The amount of work to be done is of course an important factor. With little work properly carried out the risk is proportionately less, but with misuse of present-day powerful apparatus irreparable damage may occur in a few minutes—one might even say seconds without exaggeration. With much work the danger-point may easily be reached, and it is all too true that familiarity breeds carelessness. The modern practice is to affix the protective material to the apparatus; even so, the lead-rubber apron may still be desirable. Lead-rubber gloves should be available for palpation and should be worn always by those who have occasion to contaminate their hands with iodine or other irritants, or frequently to "scrub up." All *x*-ray tubes should be provided with a filter equivalent to at least 1 mm. of aluminium. Distance is a great safeguard when diagnostic exposures (radiographs) are being made. Everyone should be as far away from the tube and the patient as possible, preferably behind a lead protection screen and behind the *x*-ray tube. Technical assistants and others present should be made to observe this principle during screening and radiography because there is a danger zone of secondary radiation all round the area of the patient that is being examined. The narrowest cylindrical diaphragm that will just "cut" the corners of the film size in use not only improves all radiographs but is a great aid to protection.

For screening, the room should be provided with a light-dimming switch so that preparation can be made in a progressively dimmed light, thereby economizing the time necessary to become fully dark-adapted. Red lighting is an alternative. It should not be possible for the eyes to meet an unshaded electric globe. The minimum screening current should be used at normal screening distances: 3 mA at from 60 to 75 kV is adequate; if it is not, then suspect your dark-adaptation. Resist the impulse to increase the

screening current; nothing is gained, and, in fact, much is lost, by over-illumination of the screen (some may doubt this, but it is a fact easy of demonstration). Intermittent screening—one or two seconds on and off—is a habit to be cultivated. The mechanical rectangular diaphragm should be closed down to the limits of the area under observation, and it should not be possible to open it to an area larger than the area of the fluorescent screen. Displacement of the tube in relation to the screen should be prevented by mechanical fixation.

According to the part under examination all screening should be approached with a definite set of questions to be answered and dealt with in a routine order; if this is done the screening time will be very much shortened. It is all too easy to leave the screen with as blank a mind as when one started. The manipulation of fractures and the removal of foreign bodies under "live" screen control should be absolutely taboo.

Protection lies in following the rules; copy not those who appear to break them.

Cold Agglutinins

Q.—*In the most interesting and useful reply given to the question on influenza in the* JOURNAL *of Dec. 11 reference is made to cold agglutinins. Could we be told just what these are, and what their clinical significance is?*

A.—Cold or auto-agglutination is a rare phenomenon that may occur in a variety of conditions—e.g., haemolytic or other severe anaemias, paroxysmal haemoglobinuria, trypanosomiasis—and has lately come into prominence because of its frequent occurrence in primary atypical pneumonia. The phenomenon is apparently due to a true agglutinin which acts only when the blood is cooled to a low temperature; this agglutinin acts not only on Group O blood but also on the blood cells of the patient—i.e., it is an auto-agglutinin. Primary atypical pneumonia is an influenza-like infection characterized by a persistent unproductive cough and positive radiological findings in the lungs. The infection is not easy to diagnose without *x*-ray examination, and even with it may be simulated by influenzal or bronchopneumonia, tuberculosis, and bronchiectasis. The presence of cold agglutinins would therefore serve as a useful method of diagnosing primary atypical pneumonia if constantly present in that infection and absent in other similar diseases. Turner and his colleagues (*Lancet*, 1943, **1**, 765) have supplied evidence that this may be so. Thus, although cold agglutinins may be present in normal blood in low titre (up to a dilution of 1/16 of the patient's serum) they appear in much greater quantity in the blood of patients with primary atypical pneumonia and behave in this disease like a specific antibody—i.e., they develop about the tenth day of the disease and disappear in convalescence. For the test 2 to 3 c.cm. of patient's blood is taken off, the serum is separated, and falling dilutions of it are mixed with a 3% suspension of washed Group O human erythrocytes. The tubes are placed in the refrigerator overnight (2° to 5° C.) and read the next morning in the same way as the Paul-Bunnell test. Titres from 1/32 to 1/2000 are obtained. The reaction is reversible, as can be shown by placing the tubes in a water-bath or incubator at 37° C., when the clumping disappears. No satisfactory explanation of the phenomenon has yet been given.

Erythema Nodosum

Q.—*What are the present views on the causation of erythema nodosum? If the streptococcus is believed to be an aetiological factor, should cases of erythema nodosum be treated with one of the sulphonamide drugs?*

A.—Erythema nodosum is believed to be an allergic reaction to infection, most commonly by the tubercle bacillus or the haemolytic streptococcus. In from 10 to 30% of cases frank tuberculosis later develops, and erythema nodosum should always be the signal for a careful clinical examination, sputum test, and *x*-ray film of the chest; inquiry for contact; and subsequent supervision and *x*-ray examination of the chest at intervals. In the cases believed to be due to streptococcal infection there is often a history of a sore throat a week or ten days previously. By the time the skin lesion appears it is too late to use sulphonamide treatment, as the trigger of the allergic explosion has already been fired. The condition is strictly comparable with acute rheumatism, where sulphonamides are of no value in treatment, though they may be of great value in the prevention of attacks.

Testicular Pain

Q.—*Can you suggest diagnosis and treatment for a man aged 48 troubled by painful swelling of the testes accompanied by lower abdominal pain of a dragging nature? If left alone it will subside in a few days, but will go immediately upon coitus or masturbation. Causes patient intense mental anxiety and worry.*

A.—The pain in the testicles in this case is probably comparable with that complained of in certain cases of severe varicocele, and is related to congestion. In the present case, as in many others, it is relieved by intercourse, which in some poorly explained way acts as a method of decongestion. The disability which it causes is more mental than physical, but all methods tending to reduce congestion are worth a trial. Thus a good suspensory bandage, and the administration of a saline purge, possibly combined with a glycerin suppository, would be of help.

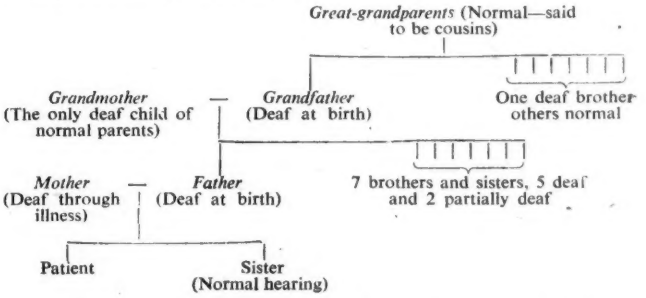
Shutting Out Sound

Q.—*A patient who has to do work requiring much concentration in noisy surroundings is anxious to obtain an ear appliance which will completely shut out sound. He has tried wax ear-plugs, but these were not sufficiently sound-proof. Can you suggest an alternative?*

A.—There is no appliance which completely shuts out sound. Noise is made up of high and low frequencies which may peak at varying intensities. Ear appliances such as plugs and pads attenuate high frequencies of the spectrum to some extent but have comparatively little effect on low ones; consequently sound as such will still be heard. The over-all intensity is affected only to a limited extent. The attenuation of sound is dependent on the density of the substance interposed between the source of sound and the ear—a brick wall, for example, attenuates it more than a wooden partition. Most ear-plugs made of solid material are uncomfortable if one aims at complete occlusion of the meatus. If much concentration for work is necessary, then sound-proofing of the working surroundings is the only remedy. Fibrous plasticine or any such malleable substance moulded to fit the external auditory meatus so as to obtain a tight seal is the only alternative.

Congenital Deafness

Q.—*Herewith a note of my patient's family history. Can you advise me what is the likelihood of her children being affected by deafness? My patient's hearing is apparently normal. She is engaged to be married, but is very anxious about the possible effect on any children of the marriage.*


Great-grandparents (Normal—said to be cousins)
Grandmother (The only deaf child of normal parents)
Grandfather (Deaf at birth)
One deaf brother others normal
Mother (Deaf through illness)
Father (Deaf at birth)
7 brothers and sisters, 5 deaf and 2 partially deaf
Patient
Sister (Normal hearing)

A.—The congenital deafness, or deaf-mutism, in this family group shows recessive inheritance, as is usual. The chances are two to one in favour of the patient being a carrier. In my opinion, however, this is not a ban to marriage provided that she does not intend to marry a blood relative on her father's side, or anyone with a family history of congenital deafness. With these exceptions the risk of a child being deaf should be only small—in fact, little greater than the risk of a recessive defect of some kind or other turning up in any marriage; for most of us, if we but knew it, are, in all probability, carriers of at least one such defect.

U.V.L. for Rickets

Q.—*What are the present views on the use of ultra-violet light (quartz mercury vapour lamp) in (a) the prevention and cure of rickets, (b) for prophylaxis in children in comparatively sunless areas? (c) Is there any evidence that U.V.L. is carcinogenic, and (d) what is your opinion on the statement that "there is no definite means of measuring the dosage"?*

A.—(*a*) The antirachitic properties of ultra-violet rays of the appropriate wave band (2,400 to 3,100 A.U.) are not in doubt. It is, however, conceivable that their application to the human skin may be futile if this does not contain those substances from which vitamin D is elaborated. Nor is it effective where the corneal layer is so thick or dirty as to prevent penetration of the rays. (*b*) Man was not intended to exist in the absence of sunlight, but some measure of adaptation is clearly possible. For those who fail to adjust themselves to reduced sunlight—particularly when dietetic provisos are satisfied—artificial light constitutes an excellent prophylactic. Some authorities rightly regard indiscriminate irradiation in the absence of indications as an error, on the grounds that the tolerance to radiation is increased and that this may detract from the efficacy of application when indications do arise. (*c*) Although the lethal action of U.V.R. on living cells results in the liberation of substances which provoke proliferation of cells, there is no conclusive evidence that when it is used in therapeutic dosages the proliferation ever assumes malignant qualities. (*d*) It is incorrect to state that "there is no definite means of measuring dosages." With elaborate physical equipment it would be quite possible to say at the end of a treatment: "X ergs or calories of a radiation

of Y wave-length have been allowed to impinge on this patient's skin." A similar statement would have to be made for every other wave-length employed. This would constitute a quantitative measurement of the dosage. How much of the radiation would be effective is another problem. The cost of the apparatus required for such a computation and the time required for it would offset the meagre practical return that would accrue.

Appointment of Coroners

Q.—*What system governs appointments to the office of coroner—i.e., by whom are such appointments made, are they advertised, or is it customary to appoint the deputy already in office? How are coroners nominated, and what are the limits of income available from their office? Is any preference shown to an applicant with a legal qualification over one who is medically qualified? Are any such appointments given only to applicants possessing both medical and legal qualifications?*

A.—A county coroner is appointed by the county council, a borough coroner by the borough council (Coroners (Amendment) Act, 1926, s. 2). If the district of a county coroner is wholly within a county borough the appointment is made by the council of that borough (Coroners Act, 1887, s. 33; Municipal Corporations Act, 1882, s. 34 (4)). There still remain a few franchise coronerships, but with certain exceptions Sect. 4 of the 1926 Act provides for their abolition and absorption in the county when a vacancy occurs. An appointing authority is not obliged by law to advertise a vacant coronership, but it is customary to advertise in the legal and medical press. There is no recognized practice of appointing the deputy already in office, but naturally it is a convenient way of training a new coroner. Coroners are remunerated by salary paid by the appointing authority under Sect. 5 of the 1926 Act, and they receive pensions (Sect. 6). The salaries of most of the surviving franchise coroners are paid by the county council. The salary paid to each coroner in the country will be found in Table XXXII of the volume of criminal statistics for 1938 (Cmd. 6167). The report for 1936 of the Departmental Committee on Coroners (Cmd. 5070), para. 16, also gives some information about the range of coroners' salaries. The pay of a deputy coroner is arranged between the coroner and deputy; the coroner's salary covers travelling and other incidental expenses, and the payment of a deputy is one of the matters which the appointing authority takes into account in fixing it. The 1926 Act, Sect. 1, requires that a coroner appointed since it became law shall have legal or medical qualification. In 1936, of the 309 coroners in England and Wales 268 were barristers or solicitors, 37 were medical practitioners, and 4 had no professional qualifications. A few of the barristers and solicitors also possessed medical qualifications (see the report on coroners (supra), paras. 11 and 13). This report contains further information on the law and practice concerning coroners, and the questioner may also refer to Jervis on *Coroners*, 7th ed., 1927, and other standard textbooks.

LETTERS, NOTES, ETC.

Certification and Secrecy

Dr. J. H. YOUNG (Leigh, Lancs) writes: The recent correspondence on professional confidence prompts me to report a case which occurred recently in my practice. A patient employed by the Ministry of Works was found to be suffering from pulmonary tuberculosis. His employers demanded a certificate of disability. On this I merely stated "illness." The Ministry insisted on knowing the nature of the complaint and would not listen to my explanation that professional secrecy forbade such a disclosure. Eventually "for the sake of fear" the patient, in a written declaration, asked me to disclose the nature of his illness. I refused to do so without such sanction, an attitude in which, I am glad to say, I received the support of the Medical Defence Union. Surely it is time the profession made a stand against such demands from employers. I must state, however, in all fairness that the majority of employers in this district appear to be satisfied with the word "illness" (or "accident"). It is not difficult to imagine embarrassing circumstances arising on frequent occasions if we are always to inform employers the nature of a patient's illness.

Thymus and Death under Anaesthesia

Dr. W. J. MOORE (Glasgow) writes: The question on the thymus and death under anaesthesia (Feb. 19, p. 277) interested me, as many years ago I introduced what I have called fractional electro-coagulation of the tonsils of such patients, and I have now dealt successfully with many cases. As a matter of fact I have just finished with a child of 5 who had very large tonsils; but from the point of view of his cardiac condition and a very prolonged coagulation time I felt it was unwise to attempt anything in the nature of radical operation. My first case was that of an adult over twenty years ago. Admitting that the treatment requires at least from six to twelve sittings the attempted results so far have been very desirable. I have not the slightest doubt that if this technique were adopted the tonsils would be very satisfactorily dealt with. I have seen the various forms of treatment mentioned tried, but without success, during the times I was assistant to the late Dr. John McIntyre. I have written several papers, but so far have not published anything relative to the tonsils, although I had intended making a communication on them at an early date.

Fröhlich's Syndrome

Wing Cmdr. H. M. STANLEY TURNER writes: I do not quite agree with the answer in "Any Questions?" to the query on this subject (Feb. 12, p. 242). Fröhlich's syndrome should be distinguished from pre-puberty infantilism, which it resembles so closely in appearance. The difference is that in the latter condition (most of the cases I have seen have been in girls) menstruation appears, the adiposity decreases, and there is a normal development of secondary sexual characteristics without the need for physiological stimulation. Therefore I should be inclined to wait until the child reaches the age of 14 or even 15, to give normal puberty a chance, rather than apply stimulation at too early an age. Some of the subjects of pre-puberty infantilism show degenerative changes in the ovaries when they reach adult life. One of my cases suddenly developed all the signs of a perforated appendix, a diagnosis confirmed by the surgeon. When the abdomen was opened the peritoneal cavity contained a large quantity of blood, due to haemorrhage into and rupture of a cyst of the right ovary, about as big as a small orange.

Mercurial Poisoning

Dr. DAVID HALER (London, W.1) writes: In your reply of March 11 (p. 381) to an inquiry about the danger of mercurial poisoning arising from the prolonged use of salyrgan or mersalyl you give a list of toxic symptoms. It is worthy of note that you do not mention sudden death, which may occur with incredible speed, during the *intravenous* injection of these mercurials. The mechanism of this unfortunate result appears to be obscure, but it is probably a greatly increased risk in chronic nephritics. At least one dozen fatal cases were described in the *Lancet* in a single communication in 1943. I personally have seen another case also in 1943; in this instance the patient was a chronic nephritic, and necropsy findings were characteristic only of that disease. Even though these cases do not appear to be very common, still they were sufficiently important to justify your noticing them among the various dangers of the therapy.

Faints in Blood Donors

Dr. FRANCES M. TAYLOR (Ambleside) writes: In the report to the Medical Research Council on fainting in blood donors (*Journal*, Feb. 26, 1944) no mention was made of the height of the blood pressure. I have the impression (gained only from general practice) that a large proportion of those persons who faint, or feel faint, during bleeding are those with a systolic blood pressure of 120 mm. or under. It would be interesting to know if any systematic observations on this point have been made.

Nausea and Vomiting of Pregnancy

Dr. A. R. MONTGOMERY (London, N.4) writes: The answer to this question in the *Journal* of March 4 (p. 346) states that none of the numerous remedies advised has proved satisfactory. As I have found coramine (oral) and benzedrine tablets very useful in this distressing complaint, I should be interested to know whether others have tried either of these preparations. Nausea and vomiting of pregnancy is often associated with a lowered blood pressure, and it was this association which suggested the use of stimulating drugs. Coramine gives an immediate effect, while benzedrine can be taken as a prophylactic first thing in the morning. It should not be necessary to emphasize that other possible causes are taken into consideration and dealt with as required. Good results have also been observed in related conditions—e.g., sea-, car-, and air-sickness.

Silicosis in a Chert-miner

Dr. C. W. EVANS (Bakewell) writes: In November, 1942, you published an article by me on silicosis in a chert-miner. I have recently had another case which is of some interest. This man died from silicosis and tuberculosis at the age of 45. He had worked in chert for 20 years in a Bakewell mine. There was, however, a family history of tuberculosis. The lungs post mortem showed definite nodules of silicosis as well as extensive tuberculosis. There had been a very considerable degree of cyanosis and dyspnoea in this case for the past two years. This is apparently the first case of silicosis proved post mortem by sections, although my former case—the patient is still alive—has been acknowledged by the Silicosis Board as being due to chert by *x*-ray findings. Of course I am only referring to silicosis which has chert as the cause. There is one other interesting point in this case. The widow has no claim to compensation because a claim was not made within five years of his leaving the mine. In point of fact the diagnosis of silicosis was not made until radiographs were taken by Dr. Hugh Morton of the Matlock Tuberculosis Clinic, where the patient was attending for the treatment of tuberculosis. My thanks are due to Dr. Harding of Sheffield for sections of the lungs.